THE JOURNAL OF

NUTRITION

OFFICIAL ORGAN OF THE AMERICAN INSTITUTE OF NUTRITION

FREDRIC W. HILL, *Editor*

Department of Nutrition
University of California
Davis, California 95616

F. H. KRATZER
Associate Editor

E. NEIGE TODHUNTER
Biographical Editor

EDITORIAL BOARD

STANLEY N. GERSHOFF
CHARLES H. HILL
DAVID KRITCHEVSKY
DONALD B. MCCORMICK
J. N. WILLIAMS, JR.
B. R. BAUMGARDT
H. FISHER
CHARLES S. LIEBER
GILBERT A. LEVEILLE
O. NEAL MILLER
WALTHER H. OTT
C. FRANK CONSOLAZIO
H. D. EATON
RAYMOND REISER
HAROLD H. SANDSTEAD
MYRON WINICK
H. H. DRAPER
JOHN E. HALVER
HELLEN M. LINKSWILER
OSCAR W. PORTMAN
HERSCHEL SIDRANSKY

VOLUME 103

JANUARY - DECEMBER 1973

PUBLISHED MONTHLY BY
THE AMERICAN INSTITUTE OF NUTRITION
BETHESDA, MARYLAND

THE JOURNAL OF NUTRITION ®
® *Trademark registered, U. S. Patent Office*

Copyright © 1973 by
THE AMERICAN INSTITUTE OF NUTRITION
All rights reserved

Contents

No. 1 JANUARY 1973

Clive Maine McCay—A Biographical Sketch. *J. K. Loosli* 3

Urea Excretion in Adult Humans with Varying Degrees of Kidney Malfunction Fed Milk, Egg or an Amino Acid Mixture: Assessment of Nitrogen Balance. *Enrique Pedro Cottini, Daniel Lino Gallina and Jose Miguel Dominguez* 11

Liver Storage of Vitamin A in Rats Fed Carotene Stereoisomers. *James P. Sweeney and Ann C. Marsh* 20

Further Studies on the Availability of the Fluoride in Fish Protein Concentrate. *B. R. Stillings, Herta R. Lagally, Elizabeth Zook and I. Zipkin* 26

Influence of Feeding DEAE Sephadex on Growth, Lactation and Lipid Utilization in the Rat. *L. P. Dryden, J. Bitman, T. R. Wrenn and J. Weyant* 36

Effect of DEAE Sephadex on Liver Vitamin A of Lactating Rats and Their Offspring. *Helene C. Cecil, Susan J. Harris, Joel Bitman and Leslie P. Dryden* 43

Nitrogen Metabolism in Lambs Fed Soybean Meal Treated with Heat, Formalin and Tannic Acid. *J. F. Nishimuta, D. G. Ely and J. A. Boling* 49

Effect of Methionine on Liver Lipid Content and Lipid Metabolism of Rats Fed a Protein-free Diet. *Yoritaka Aoyama, Masashi Nakanishi and Kiyoshi Ashida* 54

Alterations in Cerebral Protein Metabolism in the Progeny of Protein–Calorie-deficient Rats. *Cyril O. Enwonwu and Vicki Glover* 61

Development of Dermal Symptoms Resembling Those of an Essential Fatty Acid Deficiency in Immature Hypophysectomized Rats. *E. W. Haeffner and O. S. Privett* .. 74

Lysine Deficiency in the Rat: Concomitant Impairment in Carnitine Biosynthesis. *Vichai Tanphaichitr and Harry P. Broquist* 80

Effect of S-Methylcysteine Sulfoxide, S-Allylcysteine Sulfoxide and Related Sulfur-containing Amino Acids on Lipid Metabolism of Experimental Hypercholesterolemic Rats. *Yoshinori Itokawa, Kikuko Inoue, Sukenari Sasagawa and Motonori Fujiwara* 88

Influence of Dietary Cholesterol and Cholic Acid on Liver Carbohydrate Metabolism Enzymes in Rats. *Alan C. Tsai and I. A. Dyer* 93

Selenium Retention in Tissues and Sperm of Rats Fed a Torula Yeast Diet. *Daniel G. Brown and Raymond F. Burk* 102

Effect of Amino Acids on Ribosome Aggregation and Protein Synthesis in Perfused Rat Liver. *Evelyn McGown, Arlan G. Richardson, L. M. Henderson and P. B. Swan* ... 109

The Lysine and Sulfur Amino Acid Requirements at Two Stages of Growth in Chicks. *Eunyong Chung, Paul Griminger and Hans Fisher* 117

Cellular Growth during Prenatal and Early Postnatal Periods in Progeny of Pyridoxine-deficient Rats. *Wan-Hee Y. Moon and Avanelle Kirksey* 123

Essentiality of Vitamin C in Feeds for Intensively Fed Caged Channel Catfish. *Richard T. Lovell* 134

Enhancement of Iron Absorption from Ligated Segments of Rat Intestine by Histidine, Cysteine, and Lysine: Effects of Removing Ionizing Groups and of Stereoisomerism. *Darrell Van Campen* 139

High Pyridoxine Diet in the Rat: Possible Implications for Megavitamin Therapy. *Phyllis A. Cohen, Karmela Schneidman, Fredda Ginsberg-Fellner, John A. Sturman, Jerome Knittle and Gerald E. Gaull* 143

Letters 152

Guide for Authors 153

Nomenclature Policy: Generic Descriptors and Trivial Names for Vitamins and Related Compounds 159

No. 2 FEBRUARY 1973

Effects of Dietary Protein Content and Ratio of Fat to Carbohydrate Calories on Energy Metabolism and Body Composition of Growing Rats. *E. W. Hartsook, T. V. Hershberger and J. C. M. Nee* 167

Evaluation of Linear Programming Techniques in Formulating Human Diets with Rat-feeding Tests. *H. L. Wilcke, D. T. Hopkins, L. F. Reutzel and L. W. Declue* 179

Energy Metabolism in Atherosclerosis-resistant and -susceptible Pigeons. *Charlotte R. Olson and Franklin Young* 189

Anemia, Iron Storage and Ceruloplasmin in Copper Nutrition in the Growing Rat. *J. L. Evans and P. A. Abraham* 196

Effect of Dietary Protein on the Intestinal Biosynthesis of Retinol from ^{14}C-β-carotene in Rats. *Savitri K. Kamath and Lotte Arnrich* 202

Effect of Diets Devoid of One Essential Amino Acid on Pregnancy in Rats Maintained by Ovarian Steroids. *Yoshiaki Niiyama, Kyoichi Kishi, Shoji Endo and Goro Inoue* .. 207

Effects of Vascular Insufficiency on Placental Ribonuclease Activity in the Rat. *Elba G. Velasco, Jo Anne Brasel, Dirce M. Sigulem, Pedro Rosso and Myron Winick* 213

Effect of Protein and Methionine on Vitamin A Liver Storage in Rats Fed DDT. *M. L. Young, G. V. Mitchell and C. R. Seward* 218

Effect of Various Carbohydrates in a Repletion Diet after Protein Depletion on Liver Lipid Content of Rats. *Yoritaka Aoyama and Kiyoshi Ashida* 225

Vitamin E–Selenium Deficiency and Its Influence on Avian Malarial Infection in the Duck. *J. T. Yarrington, C. K. Whitehair and R. M. Corwin* 231

Development of Renal Gluconeogenesis in Chicks Fed High Fat and High Protein "Carbohydrate-free" Diets. *Robert M. Evans and Richard W. Scholz* 242

Physiological Regulation of the Circadian Rhythm in Hepatic Tyrosine Transaminase: Schedule of Protein Ingestion as a Determinant Factor. *Anik Girard-Globa and G. Bourdel* 251

Protein Deficiency: Turnover of Protein and Reutilization of Amino Acid in Cell Fractions of Rat Liver. *Peter R. Dallman and Evelyn C. Manies* 257

Thiamin Deficiency: Liver Metabolite Levels and Redox and Phosphorylation States in Thiamin-deficient Rats. *R. L. Veech, D. Veloso and M. A. Mehlman* 267

Maternal Protein Deprivation during Pregnancy or Lactation in Rats and the Efficiency of Food and Nitrogen Utilization of the Progeny. *Richard H. Barnes, Eva Kwong, Leona Morrissey, Laufey Vilhjalmsdottir and David A. Levitsky* 273

Utilization of Methionine for Phospholipid Formation as Affected by Dietary Protein in the Rat. *F. H. Radke, H. De Haas and R. A. Cook* 285

Relation between Adrenal Cortex and Hepatic Protein Synthesis in Protein–Calorie-deficient Rats. *Cyril O. Enwonwu and Kerry Jacobson* 290

Inositol Deficiency: An Intestinal Lipodystrophy in the Gerbil. *D. M. Hegsted, K. C. Hayes, Anna Gallagher and Holly Hanford* 302

Vitamin A and Bone Metabolism in the Rat. *Maija Zile, Helga Ahrens and H. F. DeLuca* 308

Oxygen Consumption by Brain Mitochondria of Rats Malnourished in Utero. *Santiago Muzzo, Tania Gregory and Lytt I. Gardner* 314

The 1973 Fall Meeting of AIN–ASCN 318

No. 3 MARCH 1973

Dietary Regulation of Liver Glucose-6-Phosphate Dehydrogenase in the Rat: Starvation and Dietary Carbohydrate Induction. *Humphrey F. Sassoon, Yosef Dror, Julia J. Watson and B. Connor Johnson* 321

Tissue Sulfhydryl Groups in Selenium-deficient Rats and Lambs. *M. A. Broderius, P. D. Whanger and P. H. Weswig* 336

Fat Versus Sucrose as the Nonprotein Calorie Portion of the Diet. *Yosef Dror, Humphrey F. Sassoon, Julia J. Watson, Donald O. Mack and B. Connor Johnson* 342

Appetite Regulation in the Rat Under Various Physiological Conditions: The Role of Dietary Protein and Calories. *Lewis Menaker and Juan M. Navia* 347

Lipogenic Enzyme Activity in Adipose Tissue during the Growth of Swine with Different Propensities to Fatten. *R. L. Hood and C. E. Allen* 353

Effect of Methionine on Specific Folate Coenzyme Pools in Vitamin B_{12} Deficient and Supplemented Rats. *Shirley W. Thenen and E. L. R. Stokstad* 363

Hypervitaminosis E in the Chick. *B. E. March, Eric Wong, L. Seier, J. Sim and J. Biely* 371

Further Purification and Mode of Action of a Goitrogenic Material from Soybean Flour. *A. M. Konijn, B. Gershon and K. Guggenheim* 378

Effect of Dietary Excesses of Lysine and Arginine on the Degradation of Lysine by Chicks. *Shu-heh Wang, L. O. Crosby and M. C. Nesheim* 384

Effect of Dietary Lactose on Intestinal Lactase Activity in Young Rats. *Joseph Leichter* .. 392

Intestinal Pyrrolase and Formamidase Activities in the Rabbit. *Horace J. Loh and Clarence P. Berg* 397

Influence of Dietary Protein Level on Plasma Cholesterol Turnover and Fecal Steroid Excretion in the Chick. *Shu-Jen Chang Yeh and Gilbert A. Leveille* 407

Detailed Body Composition Analysis on Female Rats Subjected to a Program of Swimming. *L. B. Oscai, P. A. Mole, L. M. Drusack and J. O. Holloszy* 412

Nitrite-induced Methemoglobinemia in Guinea Pigs: Influence of Diets Containing Beets with Varying Amounts of Nitrate, and the Effect of Ascorbic Acid, and Methionine. *G. S. Stoewsand, J. L. Anderson and C. Y. Lee* 419

Growth, Serum Chemical Values and Carcass Composition of Pitman-Moore Miniature Pigs during the First Eight Weeks of Life. *Floyd J. Filer, Jr., Samuel J. Fomon, Thomas A. Anderson, Dean W. Andersen, Ronald R. Rogers and Robert L. Jensen* .. 425

Changes in Tissue Magnesium, Calcium and Phosphorus Levels in Magnesium-deficient Rats in Relation to Thiamin Excess or Deficiency. *Yoshinori Itokawa and Motonori Fujiwara* 438

Biochemical and Histochemical Studies of the Selenium-deficient Pancreas in Chicks. *Tadashi Noguchi, Marilyn L. Langevin, G. F. Combs, Jr. and M. L. Scott* 444

Gastrointestinal Growth in the Fetus and Suckling Rat Pups: Effects of Maternal Dietary Protein. *M. K. Younoszai and Jill Ranshaw* 454

Cortical-evoked Responses in Pyridoxine-deficient Rats. *C. N. Stewart, D. B. Coursin and H. N. Bhagavan* 462

Effect of Adipose Tissue Site, Animal Weight, and Long-term Fasting on Lipogenesis in the Bovine. *Marvin A. Pothoven and Donald C. Beitz* 468

No. 4 APRIL 1973

Body Composition and Fat Depot Weights of Rats as Influenced by Ration Fed Dams during Lactation and Ration Fed Rats after Weaning. *Rachel Schemmel, Olaf Mickelsen and Linda Fisher* 477

Relationship between Postprandial Plasma Volatile Fatty Acids, Glucose and Insulin Levels in Sheep Fed Different Feeds. *J. P. Ross and W. D. Kitts* 488

Adaptation of Rumen Microorganisms to Biuret as an NPN Supplement to Low Quality Roughage Rations for Cattle and Sheep. *R. R. Johnson and E. T. Clemens* 494

Effect of Vitamin E and Selenium on Tissue Antioxidant Status of Rats. *Linda H. Chen* .. 503

Effect of Chromium and Tungsten on L-Ascorbic Acid Metabolism in Rats and Chicks. *G. C. Chatterjee, R. K. Roy, N. Sasmal, S. K. Banerjee and P. K. Majumder* 509

Effect of Adding Varying Levels of Lysine or Delactosed Demineralized Whey to Wheat Flour on Growth and Body Composition of Young Rats. *Majeed R. Al-Ani, Helen E. Clark and Jean M. Howe* 515

Effect of Infused Glutamine on Uric Acid Synthesis in Chickens Fed High and Low Protein Diets. *Yutaka Karasawa, Iwao Tasaki, Hiro-Omi Yokota and Fumio Shibata* .. 526

Measurement of Digestibility of Alfalfa Protein Concentrates by in vivo and in vitro Methods. *R. M. Saunders, M. A. Connor, A. N. Booth, E. M. Bickoff and G. O. Kohler* 530

Nutritional Interrelationships among Vitamin E, Selenium, Antioxidants and Ethyl Alcohol in the Rat. *O. A. Levander, V. C. Morris, D. J. Higgs and R. N. Varma* .. 536

Absorption and Secretion of Fatty Acids and Bile Acids in the Intestine of the Laying Fowl. *S. Hurwitz, A. Bar, M. Katz, D. Sklan and P. Budowski* 543

Effect of Zinc Deficiency and Wounding on DNA Synthesis in Rat Skin. *J. K. Stephan and J. M. Hsu* 548

Comparative Distribution of ^{75}Se in the Hard and Soft Tissues of Mother Rats and Their Pups. *T. R. Shearer and D. M. Hadjimarkos* 553

Antiselenium Activity of Tri-*o*-cresyl Phosphate in Rats and Japanese Quail. *L. R. Shull and P. R. Cheeke* 560

Toxicity of Alkali-treated Soyprotein in Rats. *J. Carroll Woodard and Dennis D. Short* .. 569

Effect of Dietary Protein Level and Protein Source on Plasma and Tissue Free Amino Acids in Growing Sheep. *W. G. Bergen, H. A. Henneman and W. T. Magee* 575

Intestinal Absorption of Phosphate in the Chick: Effect of Vitamin D_3 and Other Parameters. *R. H. Wasserman and A. N. Taylor* 586

Wax Esters in Fish. Absorption and Metabolism of Oleyl Alcohol in the Gourami (*Trichogaster cosby*). *D. M. Sand, C. H. Rahn and H. Schlenk* 600

Food Intake Regulation: Amino Acid Toxicity and Changes in Rat Brain and Plasma Amino Acids. *Y. Peng, J. Gubin, A. E. Harper, M. G. Vavich and A. R. Kemmerer* 608

Effect of Dietary Vitamin E on the Activities of the Glutathione Peroxidase System in Rat Tissues. *C. K. Chow, K. Reddy and Al L. Tappel* 618

Influence of Dietary Protein and Carbohydrate Levels on Liver Enzyme Activities in Quail. *W. R. Featherston and R. A. Freedland* 625

The 1973 Fall Meeting of AIN–ASCN 635

No. 5 MAY 1973

Friedrich Bidder and Carl Schmidt—A Biographical Sketch. *Franklin C. Bing* 637

Prenatal and Postnatal Development after Transitory Gestational Zinc Deficiency in Rats. *Lucille S. Hurley and Patricia B. Mutch* 649

Nutritional Consequences of the Maillard Reaction. Amino Acid Availability from Fructose-leucine and Fructose-tryptophan in the rat. *Valdemiro C. Sgarbieri, Jaime Amaya, Munehiko Tanaka and C. O. Chichester* 657

Comparison of Urea and Diammonium Citrate as Sources of Nonspecific Nitrogen for Human Adults. *Constance Kies and Hazel M. Fox* 664

The Vitamin B_6 Requirement of the Male Rat as Determined by Behavioral Patterns, Brain Pyridoxal Phosphate and Nucleic Acid Composition and Erythrocyte Alanine Aminotransferase Activity. *J. A. Driskell, L. A. Strickland, C. H. Poon and D. P. Foshee* 670

Nutritional Effectiveness of 1,25-Dihydroxycholecalciferol in Preventing Rickets in Chicks. *Kristen W. McNutt and Mark R. Haussler* 681

Immediate and Late Effects of Premature Weaning and of Feeding a High Fat or High Carbohydrate Diet to Weanling Rats. *P. Hahn* 690

Effects of Various Sugars on Hepatic Glucose-6-Phosphate Dehydrogenase, Malic Enzyme and Total Liver Lipid of the Rat. *O. E. Michaelis, IV and Bela Szepesi* 697

Influence of Food Intake Frequency on 26-^{14}C-Cholesterol Turnover in Pullets Fed a Basal and Cholesterol-enriched Diet. *P. Bobek, E. Ginter, J. Babala, J. Červeň, V. Peter and V. Chrappa* 706

Influence of Level of Dietary Copper on Weight Gain, Hematology and Liver Copper and Iron Storage of Young Pigs. *W. F. Gipp, W. G. Pond, J. Tasker, D. Van Campen, L. Krook and W. J. Visek* 713

Plasma Insulin and Amino Acid Concentrations in Rats Given an Adequate or Low Protein Diet. *Vernon R. Young, Gaston Vilaire, Paul M. Newberne and Robert B. Wilson* 720

Effects of Long-term Administration of 2-Deoxy-D-glucose on Food Intake and Weight Gain in Rats. *Chikayuki Naito, Yawara Yoshitoshi, Kyoichi Higo and Hiroshi Ookawa* 730

Effect of Early Nutrition on Adipose Cellularity and Pancreatic Insulin Release in the Zucker Rat. *P. R. Johnson, J. S. Stern, M. R. C. Greenwood, L. M. Zucker and Jules Hirsch* 738

Cessation of Uptake of Macromolecules by Neonatal Guinea Pig, Hamster and Rabbit Intestinal Epithelium (Closure) and Transport into Blood. *J. G. Lecce and C. W. Broughton* 744

Effect of Dietary Regimen on Cessation of Uptake of Macromolecules by Piglet Intestinal Epithelium (Closure) and Transport to the Blood. *James G. Lecce* 751

Dietary Influences on the Activities of Enzymes Involved in Branched-chain Amino Acid Catabolism in the Chick. *W. R. Featherston and G. W. Horn* 757

Effects of Dietary Calcium and Phosphorus on Growth, Food Conversion, Bone Ash and Hematocrit Levels of Catfish. *James W. Andrews, Takeshi Murai and Constance Campbell* 766

Nitrogen Retention, Total Body ^{40}K and Weight Gain in Teenage Pregnant Girls. *Janet C. King, Doris Howes Calloway and Sheldon Margen* 772

Utilization of Nitrogen, Energy, and Sulfur by Adolescent Boys Fed Three Levels of Protein. *Johnnie Prothro, Ingeborg MacKellar, Nemesia Reyes, Maria Linz and Chuan Chou* 786

Skeletal Development in Rats as Affected by Maternal Protein Deprivation and Postnatal Food Supply. *Ruth E. Shrader and Frances I. Zeman* 792

No. 6 JUNE 1973

EDITORIAL: The Selenium Dilemma. *M. L. Scott* 803

Effects of Protein–Calorie Malnutrition on Drug Metabolism in Rat Liver Microsomes. *Luean E. Anthony* 811

Effect of Diet and Weaning Age on in vitro Lipogenesis in Young Swine. *H. J. Mersmann, J. M. Houk, G. Phinney and M. C. Underwood* 821

Metabolic Consequences of Dietary Medium-chain Triglycerides in the Rat. *Joyce H. Wiley and G. A. Leveille* 829

Respiratory Control and Swelling in Rat Liver Mitochondria: Effect of ^{60}Co Gamma Radiation and Injected Nutrient. *Wesley D. Skidmore* 836

Interaction of Dietary Fluoride and Magnesium in Guinea Pigs. *B. L. O'Dell, R. I. Moroni and W. O. Regan* 841

Effect of Intravenous Gossypol Injection on Iron Utilization in Swine. *Charles L. Skutches, Dennis L. Herman and F. H. Smith* 851

The Separate Effects of Protein and Calorie Malnutrition on the Development and Growth of Rat Bones and Teeth. *Louis P. DiOrio, Sanford A. Miller and Juan M. Navia* ... 856

Schedule of Protein Ingestion, Nitrogen and Energy Utilization and Circadian Rhythm of Hepatic Glycogen, Plasma, Corticosterone and Insulin in Rats. *Jean Peret, Isabelle Macaire and Marc Chanez* 866

Magnesium Absorption and Secretion along the Gastrointestinal Tract of the Chicken. *W. Guenter and J. L. Sell* 875

Effect of Bound Gossypol on the Absorption of Iron by Rats. *D. L. Herman and F. H. Smith* 882

Effects of Dietary Manipulation on Adipose Tissue Glycerokinase Activity and Plasma Metabolite Levels in the Chicken (*Gallus domesticus*). *R. F. Welton, R. J. Martin, R. W. Scholz and B. R. Baumgardt* 890

Diurnal Changes in the Fatty Acid Patterns of Rat Liver Lipids. *P. Sudha Wadhwa, C. E. Elson and D. J. Pringle* 899

Hepatic Stearoyl–CoA Desaturase Activity as Affected by Early Postnatal Dietary Cyclopropene Fatty Acids. *Pullarkat K. Raju and Raymond Reiser* 904

Measurement and Spectral Characteristics of Fluorescent Pigments in Tissues of Rats as a Function of Dietary Polyunsaturated Fats and Vitamin E. *K. Reddy, B. Fletcher, Ardelle Tappel and Al Tappel* 908

Response of Rainbow Trout to Varying Protein/Energy Ratios in a Test Diet. *D. J. Lee and G. B. Putnam* 916

Effect of Medium-chain Triglycerides and Dietary Protein on Cholesterol Absorption and Deposition in the Chicken. *James J. Kenney and Hans Fisher* 923

Influence of Increased Postnatal Nutrient Intake on Kidney Cellular Development in Progeny of Protein-deficient Rats. *Lindsay H. Allen and Frances J. Zeman* 929

No. 7 JULY 1973

Free and Membrane-bound Liver Polysome Patterns of Rats with Different Dietary Intakes of Phenylalanine. *Nabil Hanna and Claude Godin* 937

Influence of Protein Under- and Overnutrition on Spontaneous Tumor Prevalence in the Rat. *Morris H. Ross and Gerrit Bras* 944

Cadmium Toxicity in Growing Swine. *R. J. Cousins, A. K. Barber and J. R. Trout* 964

Effect of Zinc Repletion Late in Gestation on Parturition in the Zinc-deficient Rat. *Jean Apgar* 973

Intestinal Bile Acids and Cholesterol Absorption in the Germfree Rat. *B. S. Wostmann* 982

Effects of the Dietary Carbohydrate–Fat Combination on Changed Lipid Metabolism Induced in Rats by Amino Acid Imbalance. *Louise Williams and Catherine Carroll* 991

Conversion of Arginine to Proline in the Chick. *R. E. Austic* 999

An Optimal Level of Inorganic Sulfate for the Diet of a Rat. *John T. Smith* 1008

In vitro Synthesis of Anterior Pituitary Growth Hormone as Affected by Maternal Protein Deprivation and Postnatal Food Supply. *Ruth E. Shrader and Frances J. Zeman* 1012

MONOGRAPH: A Conspectus of Research on Calcium Requirements of Man. *M. Isabel Irwin and Eldon W. Kienholz* 1019

Invitations for Nominations 1096

Program and Abstracts of Papers for the First Joint Fall Meeting of the AIN and the ASCN i

No. 8 AUGUST 1973

Growth and Metabolism of Rats Fed Nonprotein Nitrogen Diets Supplemented with Nicotinamide, Succinate and Pyridoxine. *R. L. Prior, A. J. Clifford and W. J. Visek* 1099

Effects of Urea in Rats Deprived of Arginine. *R. L. Prior and W. J. Visek* 1107

Patterns of Protein Feeding and the Biosynthesis of Vitamin A from Carotene in Rats. *Barbara Stoecker and Lotte Arnrich* 1112

Liver Cholesterol Concentration in Relation to Hepatic Cholesterogenesis and Activity of Certain Liver Enzymes in Rats. *Alan C. Tsai and I. A. Dyer* 1119

Aldosterone Producing Capacity of Adrenal Glands of Sodium-restricted Pregnant Rats. *Saeed A. Khokhar and Ruth L. Pike* 1126

Feedlot Performance and Blood Plasma Amino Acid Patterns in Beef Steers Fed Diethylstilbestrol under Ad Libitum, Restricted, and Compensatory Conditions. *R. R. Oltjen, H. Swan, T. S. Rumsey, D. J. Bolt and B. T. Weinland* 1131

Monosodium Glutamate Metabolism in the Neonatal Pig: Effect of Load on Plasma, Brain, Muscle and Spinal Fluid Free Amino Acid Levels. *Lewis D. Stegink, L. J. Filer, Jr., and George L. Baker* 1138

Monosodium Glutamate Metabolism in the Neonatal Pig: Conversion of Administered Glutamate into Other Metabolites in vivo. *Lewis D. Stegink, Marvin C. Brummel, David P. Boaz and L. J. Filer, Jr.* 1146

Utilization of 1,3-Butanediol and Nonspecific Nitrogen in Human Adults. *Constance Kies, Richard B. Tobin, Hazel Metz Fox and Myron A. Mehlman* 1155

Protein Requirements of Man: Efficiency of Egg Protein Utilization at Maintenance and Submaintenance Levels in Young Men. *Vernon R. Young, Yvonne S. M. Taylor, William M. Rand and Nevin S. Scrimshaw* 1164

Effects of Dietary Zinc on Zinc Enzymes in the Rat. *Agnes M. Huber and Stanley N. Gershoff* 1175

Effect of Chelating Agents on Chromium Absorption in Rats. *Nelson S. C. Chen, Alan Tsai and I. A. Dyer* 1182

Evaluation of Vitamin D_3 Supplements by Biological Assay Using the Turkey. *Ho Seung Yang, Paul E. Waibel and Juan Brenes* 1187

Efficiency of Conversion of Tryptophan to Niacin in Humans. *Itsiro Nakagawa, Tetsuzo Takahashi, Atsuko Sasaki, Masatoshi Kajimoto and Taeko Suzuki* 1195

Effects of Dietary Fat and of a Lipolytic Agent on Postprandial Free Fatty Acids and Fasting Serum Lipids in the Dog. *William F. Prigge and Francisco Grande* 1200

Comparative Effect of Intravenously Administered Nitrogenous Compounds on Uric Acid Synthesis in Chickens Fed a 20% Protein Diet. *Yutaka Karasawa, Iwao Tasaki, Hito-Omi Yokota and Fumio Shibata* 1208

Effects of Feeding and Exercise Regimens on Adipose Tissue Glycerokinase Activity and Body Composition of Lean and Obese Mice. *R. F. Welton, R. J. Martin and B. R. Baumgardt* 1212

Plasma Tryptophan Response Curve and Tryptophan Requirements of Elderly People. *K. Tontisirin, V. R. Young, M. Miller and N. S. Scrimshaw* 1220

Invitations for Nominations 1229

No. 9 SEPTEMBER 1973

Harry Steenbock–A Biographical Sketch. *Howard A. Schneider* 1233

A Feeding Study of a Used, Partially Hydrogenated Soybean Oil, Frying Fat in Dogs. *Granville A. Nolen* 1248

Maltose in Total Parenteral Nutrition of Rats. *Norman N. Yoshimura, Helene Ehrlich, William Wilkinson, Thomas L. Westman and Fred H. Deindoerfer* 1256

A Short Assay for the Estimation of Dietary Purine Compounds, Using a Rat Model System with Inhibition of Uricase. *Björn Norrlind and Reinhold Kihlberg* 1262

Influence of Dietary Lipids on Plasma and Hepatic Lipids and on Blood Clotting Properties in Rats Fed Oral Contraceptives. *Mary H. Tabacchi and Avanelle Kirksey* .. 1270

Development of Sulfur Depletion in Pregnant and Fetal Rats: Interaction of Protein Restriction and Indole or Salicylamide Administration. *Patricia C. McGarry and Daphne A. Roe* 1279

Digestion and Absorption of Protein along the Intestinal Tract of Chicks Fed Raw and Heated Soybean Meal. *Rachel Bielorai, Musha Tamir, Eugenia Alumot, A. Bar and S. Hurwitz* 1291

Lipid Absorption and Secretion in the Chick: Effect of Raw Soybean Meal. *D. Sklan, P. Budowski, I. Ascarelli and S. Hurwitz* 1299

The Amino Acid Requirement of the Growing Rabbit: An Estimate of Quantitative Needs. *Ishola Adamson and Hans Fisher* 1306

Protein Deficiency: Contrasting Effects on DNA and RNA Metabolism in Rat Liver. *Peter R. Dallman and Evelyn C. Manies* 1311

Influence of Fluoride Intake on Reproduction in Mice. *H. H. Messer, W. D. Armstrong and L. Singer* 1319

Vulnerability of Developing Brain: Relative Effects of Growth Restriction during the Fetal and Suckling Periods on Behavior and Brain Composition of Adult Rats. *J. L. Smart, John Dobbing, B. P. F. Adlard, A. Lynch and Jean Sands.* 1327

Interactions of Dietary Levels of Protein and Energy on Channel Catfish (*Ictalurus punctatus*). *Jimmy W. Page and James W. Andrews* 1339

Postprandial Plasma Free Methionine as an Indicator of Dietary Methionine Adequacy in the Human Infant. *George G. Graham and Robert P. Placko* 1347

^{14}C-α-Aminoisobutyric Acid Uptake in Vitamin B-6-deficient Rats: Effect of Growth Hormone and Vitamin B-6. *Anastasia Makris and Stanley Gershoff* 1352

Impaired Collagen Formation in the Scorbutic Channel Catfish. *Robert P. Wilson and William E. Poe* 1359

Availability of Magnesium: Balance Studies in Rats with Various Inorganic Magnesium Salts. *David A. Cook* 1365

Proceedings of the Thirty-seventh Annual Meeting of The American Institute of Nutrition. Shelburne Hotel, Atlantic City, New Jersey, April 16–20, 1973 1371

Invitations for Nominations 1382

Erratum i

No. 10 OCTOBER 1973

Effect of Dietary Protein and Magnesium on Selected ATP Phosphotransferases and Neuromuscular Behavior in Young Rats. *Joan L. Caddell and Robert E. Olson* 1385

Hypercholesterolemic Effect in the Female Rat of Egg Yolk Versus Crystalline Cholesterol Dissolved in Lard. *Ido Bartov, Raymond Reiser and Glen R. Henderson* 1400

Influence of Dietary Nitrogen Source, Concentrate Level and Biuret Level on the Adaptation of Rumen Microorganisms to Biuret as a Nonprotein Nitrogen Source. *E. T. Clemens and R. R. Johnson* 1406

Dietary Regulation of Fatty Acid Synthetase and Microsomal Glycerophosphate Acyltransferase Activities in Rat Liver. *Rex D. Weigand, G. Ananda Rao and Raymond Reiser* 1414

Effects of Dietary Protein Quality on Drug Metabolism in the Rat. *Cristobal L. Miranda and Ryland E. Webb* 1425

Effect of Fluoride on Bone Formation and Strength in Japanese Quail. *M. M. Chan, R. B. Rucker, F. Zeman and R. S. Riggins* 1431

Wax Esters in Fish. Metabolism of Dietary Palmityl Palmitate in the Gourami (*Trichogaster cosby*). *C. H. Rahn, D. M. Sand and H. Schlenk* 1441

Inositol Deficiency in Gerbils: Dietary Effects on the Intestinal Lipodystrophy. *J. F. Kroes, D. M. Hegsted and K. C. Hayes* 1448

Metabolism of Aspartame in Monkeys. *J. A. Oppermann, E. Muldoon and R. E. Ranney* 1454

Effect of Aspartame on Phenylalanine Metabolism in the Monkey. *J. A. Oppermann, E. Muldoon and R. E. Ranney* 1460

Kidney Function in the Progeny of Protein-deficient Rats. *Lindsay H. Allen and Frances J. Zeman* 1467

Lipogenesis in the Ruminant: Effect of Fasting and Refeeding on Fatty Acid Synthesis and Enzymatic Activity of Sheep Adipose Tissue. *D. L. Ingle, D. E. Bauman, R. W. Mellenberger and D. E. Johnson* 1479

Contribution of the Cytosol and Mitochondrial Pathways to Phosphoenolpyruvate Formation during Gluconeogenesis. *Yeh-shan Peng, Melinda Brooks, Charles Elson and Earl Shrago* 1489

Growth Responses in Thyroidectomized, Hypophysectomized and Alloxan Diabetic Rats Infected with Plerocercoids of the Tapeworm, *Spiromctra mansonoides*. *William R. Ruegamer and Justus F. Mueller* 1496

Mode of Action of Selenium and Vitamin E in Prevention of Exudative Diathesis in Chicks. *Tadashi Noguchi, Austin H. Cantor and Milton L. Scott* 1502

Limiting Amino Acids in Noog (*Guizottia abyssinca*) as Determined by Amino Acid Composition, Plasma Amino Acid Concentrations, and Growth of the Rat. *H. Mehansho, Y. Peng, M. G. Vavich and A. R. Kemmerer* 1512

Letters 1519

No. 11 NOVEMBER 1973

Effects of Sucrose Versus Fat as Energy Source in the Diet on Rat Liver Polysome Patterns. *Julia J. Watson, Charles Cook, Darshan Singh Kelley, A. M. Chandler and B. Connor Johnson* 1521

Influence of Whole Grain Products, Phosphates, and Tin upon Dental Caries in the Rat. *James L. McDonald, Jr. and George K. Stookey* 1528

Depression of Plasma Cholesterol in Calves by Supplementing a High Cholesterol Liquid Diet with Dry Feed. *N. L. Jacobson, M. Richard and P. J. Berger* 1533

Effect of Perinatal Undernutrition on the Metabolism of Catecholamines in the Rat Brain. *W. J. Shoemaker and R. J. Wurtman* 1537

Effect of Pyridoxine on Red Cell Fatty Acid Composition in Mature Rats Fed an Essential Fatty Acid-deficient Diet. *Christina M. Zehaluk and Brian L. Walker* .. 1548

Nutritional Iron Deficiency as a Determinant of Host Resistance in the Rat. *R. B. Baggs and S. A. Miller* 1554

Effect of Dietary Sulfur on Serum Cholesterol and the Glycocholic:Taurocholic Acid Ratio of the Rat. *Beth Feland, Elfrieda G. Fuqua and John T. Smith* 1561

Taurine Pool Sizes in the Rat: Effects of Vitamin B-6 Deficiency and High Taurine Diet. *John A. Sturman* 1566

Studies on Amino Acid Uptake by Ovine Small Intestine. *John T. Johns and Werner G. Bergen* 1581

Gluconeogenesis from Amino Acids in Mature Wether Sheep. *R. N. Heitmann, W. H. Hoover and C. J. Sniffen* 1587

Effects of Dietary Protein Content and Glucagon Administration on Tyrosine Metabolism and Tyrosine Toxicity in the Rat. *Clement C. Y. Ip and Alfred E. Harper* ... 1594

Studies of the Protein Requirement of the Neonatal Rat. *Dorice M. Czajka-Narins, Sanford A. Miller and Ann M. Browning* 1608

Partial Purification of Rat Urinary Anorexigenic Substance. *Young-woo Lee and Ira J. Lichton* 1616

Differential Effects of Protein–Calorie Restriction and Subsequent Repletion on Neuronal and Nonneuronal Components of Cerebral Cortex in Newborn Rats. *Feridoun Siassi and Bijan Siassi* 1625

Letters 1634

Erratum 1636

No. 12 DECEMBER 1973

Effects of Early Postnatal Dietary Protein Restriction and Repletion on Porcine Muscle Growth and Composition. *P. L. Gilbreath and J. Richard Trout* 1637

Response in Vitamin B-12 Production and Absorption to Increasing Cobalt Intake in the Sheep. *M. F. Hedrich, J. M. Elliot and J. E. Lowe* 1646

Changes of Embryonic Wastage during Pregnancy in Rats Fed Low and High Energy Diets. *Mamoru Saitoh and Seiya Takahashi* 1652

Stimulation of Basal Metabolic Rate of Rats Fed Dried-grass Silage and Silage Flavonoids. *Syed A. Qasim and David A. Stelzig* 1658

Influence of Protein and Vitamin Levels on the Nutritional Value of Heated Fats for Rats. *C. Hemans, F. Kummerow and E. G. Perkins* 1665

Studies on Protein Requirements of Young Men Fed Egg Protein and Rice Protein with Excess and Maintenance Energy Intakes. *Goro Inoue, Yoshiaki Fujita and Yoshiaki Niiyama* 1673

Effects of Large Doses of Vitamin C in Guinea Pigs and Rats. *B. K. Nandi, A. K. Majumder, N. Subramanian and I. B. Chatterjee* 1688

Growth Rate, Lipid Composition, Metabolism and Myocardial Lesions of Rats Fed Rapeseed Oils (*Brassica campestris* var. Arlo, Echo and Span, and *B. napus* var. Oro). *J. K. G. Kramer, S. Mahadevan, J. R. Hunt, F. D. Sauer, A. H. Corner and K. M. Charlton* 1696

Comparative Effects of Casein and Amino Acid Mixture Simulating Casein on Growth and Food Intake in Rats. *Hiroshi Itoh, Tetsuya Kishi and Ichiro Chibata* 1709

Effect of Protein-deficient Diets with Various Amounts of Carbohydrate on Intestinal Disaccharidase Activities in the Rat. *Judith L. Adams and Joseph Leichter* 1716

Transketolase Activity in Tissues of Uremic Rats. *Ofelia V. Dirige, Mary Jacob, Marian Wang, Marian E. Swendseid and Joel D. Kopple* 1723

Effect on Uric Acid Synthesis of the Infusion of Various Levels of Ammonium Acetate or Glutamine in Chickens. *Yutaka Karasawa and Iwao Tasaki* 1727

Response of Rats to Amino Acid Supplementation of Brown Egg Albumin. *Valdemiro C. Sgarbieri, Jaime Amaya, Munehiko Tanaka and C. O. Chichester* 1731

Effect of Zinc Deficiency in Rats on Insulin Release from the Pancreas. *Agnes M. Huber and Stanley N. Gershoff* 1739

Comparison of the Portal Absorption of Protein and Small Peptides in the Fed and Fasted Rat. *Hugo E. Gallo-Torres and Jacqueline Ludorf* 1745

Plasma and Tissue Tryptophan Levels in Relation to Tryptophan Requirements of Weanling and Adult Rats. *Vernon R. Young and Hamish N. Munro* 1756

Effect of Copper Status on the Urinary Excretion of Tryptophan Metabolites and Amino Acids by the Rat. *Louise F. Gray and Louise J. Daniel* 1764

Contribution of Trypsin Inhibitors to the Deleterious Effects of Unheated Soybeans Fed to Rats. *M. L. Kakade, Danny E. Hoffa and Irvin E. Liener* 1772

Index to Volume 103 1779

Index,* Volume 103

A

ABRAHAM, P. A. See Evans, J. L., 196.

Absorption, intestinal, of phosphate in the chick: effect of vitamin D_3 and other parameters, 586.

— and secretion of magnesium along the gastrointestinal tract of the chicken, 875.

Acetyl CoA carboxylase activity and fatty acid synthesis of sheep adipose tissue, effect of fasting and refeeding on, 1479.

ADAMS, J. L., AND J. LEICHTER. Effect of protein-deficient diets with various amounts of carbohydrate on intestinal disaccharidase activities in the rat, 1716.

ADAMSON, I., AND H. FISHER. The amino acid requirement of the growing rabbit: an estimate of quantitative needs, 1306.

Adipose glycerokinase activity and plasma metabolite levels in the chicken, effects of dietary manipulation on, 890.

Adipose tissue site, animal weight and long-term fasting: effect on lipogenesis in cattle, 468.

ADLARD, B. P. F. See Smart, J. L., 1327.

Adrenal gland, relation to hepatic protein synthesis in protein–calorie-deficient rat, 290.

Adrenals of sodium-restricted pregnant rats, aldosterone producing capacity of, 1126.

AHRENS, H. See Zile, M., 308.

AL-ANI, M. R., H. E. CLARK AND J. M. HOWE. Effect of adding varying levels of lysine or delactosed demineralized whey to wheat flour on growth and body composition of young rats, 515.

Alcohol (ethanol), vitamin E, selenium and antioxidants: interrelationships in the rat, 536.

Aldosterone producing capacity of adrenal glands of sodium-restricted pregnant rats, 1126.

Alfalfa protein concentrates, measurement of their digestibility by in vivo and in vitro methods, 530.

Alkaline phosphatase activity of plasma and bone reduced in vitamin A-deficient rat, 308.

ALLEN, C. E. See Hood, R. L., 353.

ALLEN, L. H., AND F. J. ZEMAN. Influence of increased postnatal nutrient intake on kidney cellular development in progeny of protein-deficient rats, 929.

—, and —. Kidney function in the progeny of protein-deficient rats, 1467.

S-Allylcysteine sulfoxide and other sulfur-containing amino acids, effect on lipid metabolism of experimental hypercholesterolemic rats, 88.

ALUMOT, E. See Bielorai, R., 1291.

AMAYA, J. See Sgarbieri, V. C., 657, 1731.

American Institute of Nutrition, proceedings, 37th annual meeting, 1973, 1371.

Amino acid(s) availability from fructose-leucine and fructose-tryptophan in the rat, 657.

—, branched-chain, catabolism of in the chick: dietary influences on the activities of enzymes involved in, 757.

— content of rat brain and plasma, relationship to amino acid toxicity and food intake, 608.

—, effect on ribosome aggregation and protein synthesis in perfused rat liver, 109.

—, free, in plasma and tissue of growing sheep, effect of dietary protein level and source on, 575.

—, gluconeogenesis from in mature wether sheep, 1587.

—, growth limiting, in noog meal as determined by amino acid composition, plasma amino acid concentrations, and growth of the rat, 1512.

— (histidine, cysteine and lysine), enhancement of iron absorption from ligated segments of rat intestine by; effects of removing ionizing groups and of stereo isomerism, 139.

— and insulin concentrations in plasma of rats given adequate or low protein diet, 720.

— levels in plasma, brain, muscle and spinal fluid of neonatal pig; effect of monosodium glutamate on, 1138.

— mixture simulating casein, effect on growth and food intake of rat compared to casein diet, 1709.

— patterns in blood plasma and feedlot performance of beef steers fed diethylstilbestrol, 1131.

— requirement of the growing rabbit: an estimate of quantitative needs, 1306.

— supplementation of brown egg albumin, response of rats to, 1731.

— toxicity, effect on food intake and amino acid content of rat brain and plasma, 608.

— and tryptophan metabolites, urinary excretion of by rat, effect of copper nutriture on, 1764.

— uptake by ovine small intestine, 1581.

^{14}C-α-Aminoisobutyric acid uptake in vitamin B-6-deficient rats: effect of growth hormone and vitamin B-6, 1352.

Ammonia or glutamine infusion at various levels in chickens, effect on uric acid synthesis, 1727.

ANDERSEN, D. W. See Filer, L. J., Jr., 425.

ANDERSON, J. L. See Stoewsand, G. S., 419.

ANDERSON, T. A. See Filer, L. J., Jr., 425.

ANDREWS, J. W., T. MURAI AND C. CAMPBELL. Effects of dietary calcium and phosphorus on growth, food conversion, bone ash and hematocrit levels of catfish, 766.

—. See Page, J. W., 1339.

Anemia, iron storage and ceruloplasmin in copper nutrition in the growing rat, 196.

— in rat produced by feeding lysine-deficient wheat gluten, 80.

Anorexigenic substance in rat urine, partial purification of, 1616.

ANTHONY, L. E. Effects of protein–calorie malnutrition on drug metabolism in rat liver microsomes, 811.

* Authors and subjects of abstracts submitted to the First Joint Fall Meeting of the AIN and the ASCN are not included in this index. The abstracts were published in the July issue of THE JOURNAL OF NUTRITION, pages xvii through xxix; the author index for these abstracts is on pages xxx and xxxi.

Antioxidants, vitamin E, selenium and ethyl alcohol: nutritional interrelationships in the rat, 536.
Antioxidant status of rat tissue, effect of vitamin E and selenium on, 503.
Aoyama, Y., and K. Ashida. Effect of various carbohydrates in a repletion diet after protein depletion on liver lipid content of rats, 225.
—, M. Nakanishi and —. Effect of methionine on liver lipid content and lipid metabolism of rats fed a protein-free diet, 54.
Apgar, J. Effect of zinc repletion late in gestation on parturition in the zinc-deficient rat, 973.
Appetite regulation in the rat under various physiological conditions: the role of dietary protein and calories, 347.
Arginase activity in chick kidney, effect of excess dietary lysine and arginine on, 384.
Arginine, conversion of to proline in the chick, 999.
—, effects of urea in rats deprived of, 1107.
Armstrong, W. D. See Messer, H. H., 1319.
Arnrich, L. See Kamath, S. K., 202.
—. See Stoecker, B., 1112.
Ascarelli, I. See Sklan, D., 1299.
L-Ascorbic acid metabolism in rats and chicks, effect of chromium and tungsten on, 509.
Ashida, K. See Aoyama, Y., 54, 225.
Aspartame, effect on phenylalanine metabolism in the monkey, 1460.
—, metabolism of in monkeys, 1454.
Atherosclerosis-resistant and -susceptible pigeons, energy metabolism in, 189.
ATP phosphotransferases and neuromuscular behavior in young rats, effect of dietary protein and magnesium on selected, 1385.
Austic, R. E. Conversion of arginine to proline in the chick, 999.

B

Babala, J. See Bobek, P., 706.
Baggs, R. B., and S. A. Miller. Nutritional iron deficiency as a determinant of host resistance in the rat, 1554.
Baker, G. L. See Stegink, L. D., 1138.
Banerjee, S. K. See Chatterjee, G. C., 509.
Bar, A. See Bieloraï, R., 1291.
—. See Hurwitz, S., 543.
Barber, A. K. See Cousins, R. J., 964.
Barnes, R. H., E. Kwong, L. Morrissey, L. Vihjalmsdottir and D. A. Levitsky. Maternal protein deprivation during pregnancy or lactation in rats and the efficiency of food and nitrogen utilization of the progeny, 273.
Bartov, I., R. Reiser and G. R. Henderson. Hypercholesterolemic effect in the female rat of egg yolk versus crystalline cholesterol dissolved in lard, 1400.
Basal metabolic rate of rats fed dried-grass silage and silage flavonoids, stimulation of, 1658.
Bauman, D. E. See Ingle, D. L., 1479.
Baumgardt, B. R. See Welton, R. F., 890, 1212.
Beets with varying amounts of nitrate: effect on nitrite-induced methemoglobinemia in guinea pigs, and the effect of ascorbic acid and methionine, 419.
Behavior and brain growth of adult rats, effects of undernutrition during fetal and suckling periods on, 1327.
— patterns and biochemical characteristics of male rats, vitamin B_6 requirement determined by, 670.
Beitz, D. C. See Pothoven, M. A., 468.
Berg, C. P. See Loh, H. J., 397.
Bergen, W. G., H. A. Henneman and W. T. Magee. Effect of dietary protein level and protein source on plasma and tissue free amino acids in growing sheep, 575.
—. See Johns, J. T., 1581.
Berger, P. J. See Jacobson, N. L., 1533.
Bhagavan, H. N. See Stewart, C. N., 462.
Bickoff, E. M. See Saunders, R. M., 530.
Bidder, Friedrich, biography of, 637.
Bieloraï, R., M. Tamir, E. Alumot, A. Bar and S. Hurwitz. Digestion and absorption of protein along the intestinal tract of chicks fed raw and heated soybean meal, 1291.
Biely, J. See March, B. E., 371.
Bieri, J. G. Letters to the editor: Vitamin A contamination in commercial stabilized vitamin E, 152.
Bile acids and fatty acids, absorption and secretion of in the intestine of laying hens, 543.
—, intestinal, and cholesterol absorption in the germfree rat, 982.
Bing, F. C. Friedrich Bidder and Carl Schmidt—a biographical sketch, 637.
Biographies: Bidder, Friedrich, 637; McCay, Clive Maine, 1; Schmidt, Carl, 637; Steenbock, Harry, 1233.
Bitman, J. See Cecil, H. C., 43.
—. See Dryden, L. P., 36.
Biuret as a nonprotein nitrogen source, influence of dietary nitrogen source, concentrate level and biuret level in sheep on the adaptation of rumen microorganisms to, 1406.
— as an NPN supplement to low quality roughage rations for cattle and sheep, adaptation of rumen microorganisms to, 494.
Blood clotting properties in rats fed oral contraceptives, effect of dietary lipids on plasma and hepatic lipids and on, 1270.
Boaz, D. P. See Stegink, L. D., 1146.
Bobek, P., E. Ginter, J. Babala, J. Červeň, V. Peter and V. Chrappa. Influence of food intake frequency on 26-^{14}C-cholesterol turnover in pullets fed a basal and cholesterol-enriched diet, 706.
Body composition and fat depot weights of rats as influenced by ration-fed dams during lactation and that fed rats after weaning, 477.
— of female rats subjected to a program of swimming, 412.
—, growth and serum chemical values of Pitman-Moore miniature pigs during the first 8 weeks of life, 425.
— and growth of young rats, effect of adding varying levels of lysine or delactosed demineralized whey to wheat flour on, 515.
— of lean and obese mice; effects of feeding and exercise on adipose tissue glycerokinase activity and, 1212.
Boling, J. A. See Nishimuta, J. F., 49.
Bolt, D. J. See Oltjen, R. R., 1131.
Bone(s) development in rats as affected by maternal protein deprivation and postnatal food supply, 792.

— formation and strength in Japanese quail, effect of fluoride and calcium on, 1431.
— metabolism in the rat, effect of vitamin A deficiency on, 308.
— and teeth of rat, the separate effects of protein and calorie malnutrition on the development and growth of, 856.
Booth, A. N. See Saunders, R. M., 530.
Bourdel, G. See Girard-Globa, A., 251.
Brain content of pyridoxal-5'-phosphate, depletion of in pyridoxine-deficient rat, 462.
— development in newborn rats, differential effects of perinatal protein–calorie restriction in, 1625.
— growth and behavior of adult rats, effects of undernutrition during fetal and suckling periods on, 1327.
— mitochondria of rats malnourished in utero, oxygen consumption by, 314.
— of progeny of protein–calorie-deficient rat, altered protein metabolism in, 61.
—, rat, effect of perinatal undernutrition on the metabolism of catecholamines in, 1537.
Bras, G. See Ross, M. H., 944.
Brasel, J. A. See Velasco, E. G., 213.
Brenes, J. See Yang, H. S., 1187.
Broderius, M. A., P. D. Whanger and P. H. Weswig. Tissue sulfhydryl groups in selenium-deficient rats and lambs, 336.
Broquist, H. P. See Tanphaichitr, V., 80.
Brooks, M. See Peng, Y., 1489.
Broughton, C. W. See Lecce, J. G., 744.
Brown, D. G., and R. F. Burk. Selenium retention in tissues and sperm of rats fed a Torula yeast diet, 102.
Brown egg albumin, response of rats to amino acid supplementation of, 1731.
Browning, A. M. See Czajka-Narins, D. M., 1608.
Brummel, M. C. See Stegink, L. D., 1146.
Budowski, P. See Hurwitz, S., 543.
—. See Sklan, D., 1299.
Burk, R. F. See Brown, D. G., 102.
1,3-Butanediol and nonspecific nitrogen, utilization of in human adults, 1155.

C

Caddell, J. L., and R. E. Olson. Effect of dietary protein and magnesium on selected ATP phosphotransferases and neuromuscular behavior in young rats, 1385.
Cadmium toxicity in growing swine, 964.
Calcification of bone depressed in chicks fed dietary excess vitamin E, 371.
Calcium and fluoride, effect of on bone formation and strength in Japanese quail, 1431.
—, magnesium and phosphorus levels in tissues of magnesium-deficient rats as related to thiamin excess or deficiency, 438.
— mobilization from bone in the rat, effect of vitamin A deficiency on, 308.
— and phosphorus, effects on growth, food conversion, bone ash and hematocrit levels of catfish, 766.
— requirements of man; a conspectus of research on, 1019.
Calloway, D. H. See King, J. C., 772.
Calories and protein in diet: their role in appetite regulation in the rat under various physiological conditions, 347.
Calves, depression of plasma cholesterol in, by supplementing a high-cholesterol liquid diet with dry feed, 1533.
Campbell, C. See Andrews, J. W., 766.
Cantor, A. H. See Noguchi, T., 1502.
Carbohydrate calories, ratio to fat calories, and level of protein in diet, effects on energy metabolism and body composition of growing rats, 167.
—, dietary, effect of various sugars on hepatic enzyme activities ("enzyme overshoot") and total liver lipid in the rat, 697.
— and fat combinations in rat diet, joint effects on changes in lipid metabolism induced by amino acid imbalance, 991.
— metabolism enzymes in rat liver, influence of dietary cholesterol and cholic acid on, 93.
—, various, in a repletion diet after protein depletion effect on liver lipid content of rats, 225.
Caries, dental, relationship with increased dietary intake of selenium, 553.
Carnitine biosynthesis in rat impaired by lysine deficiency, 80.
Carotene, biosynthesis of vitamin A from in rats, effect of protein feeding patterns on, 1112.
—, liver storage of vitamin A in rats fed stereoisomers of, 20.
^{14}C-β-carotene, effect of dietary protein on the intestinal biosynthesis of retinol in rats from, 202.
Carroll, C. See Williams, L., 991.
Casein diet and amino acid mixture simulating casein, comparative effects on growth and food intake of rat, 1709.
Catecholamines in rat brain, effect of perinatal undernutrition on the metabolism of, 1537.
Catfish, channel, intensively fed, caged; essentiality of vitamin C in feeds, 134.
—, channel; interactions of dietary levels of protein and energy on, 1339.
—, channel, scorbutic: impaired collagen formation in, 1359.
Cattle, effect of adipose tissue site, animal weight, and long-term fasting on lipogenesis in, 468.
—, effects of dietary calcium and phosphorus on growth, food conversion, bone ash and hematocrit levels in, 766.
— and sheep, adaptation of rumen microorganisms to biuret as an NPN supplement to low quality roughage rations, 494.
Cecil, H. C., S. J. Harris, J. Bitman and L. P. Dryden. Effect of DEAE Sephadex on liver vitamin A of lactating rats and their offspring, 43.
Cellular growth during prenatal and early postnatal periods in progeny of pyridoxine-deficient rats, 123.
Cellularity, adipose, and pancreatic insulin release in the Zucker rat; effect of early nutrition on, 738.
Central nervous system function in rats, effect of pyridoxine deficiency on, 462.
Cerebral cortex in newborn rats, differential effects of protein–calorie restriction and subsequent repletion on neuronal and nonneuronal components of, 1625.

Cerebrum of progeny of protein–calorie-deficient rat, altered protein metabolism in, 61.
Ceruloplasmin, anemia and iron storage in the copper-deficient and repleted growing rat, 196.
ČERVEŇ, J. See Bobek, P., 706.
CHAN, M. M., R. B. RUCKER, F. ZEMAN AND R. S. RIGGINS. Effect of fluoride on bone formation and strength in Japanese quail, 1431.
CHANDLER, A. M. See Watson, J. J., 1521.
CHANEZ, M. See Peret, J., 866.
CHARLTON, K. M. See Kramer, J. K. G., 1696.
CHATTERJEE, G. C., R. K. ROY, N. SASMAL, S. K. BANERJEE AND P. K. MAJUMDER. Effect of chromium and tungsten on L-ascorbic acid metabolism in rats and chicks, 509.
CHATTERJEE, I. B. See Nandi, B. K., 1688.
CHEEKE, P. R. See Shull, L. R., 560.
Chelating agents, effect on chromium absorption in rats, 1182.
CHEN, L. H. Effect of vitamin E and selenium on tissue antioxidant status of rats, 503.
CHEN, N. S. C., A. TSAI AND I. A. DYER. Effect of chelating agents on chromium absorption in rats, 1182.
CHIBATA, I. See Itoh, H., 1709.
CHICHESTER, C. O. See Sgarbieri, V. C., 657, 1731.
Chick(s), conversion of arginine to proline in, 999.
—, development of renal gluconeogenesis with high fat and high protein "carbohydrate-free" diets, 242.
—, dietary influences on the activities of enzymes involved in branched-chain amino acid catabolism in, 757.
—, effect of dietary excesses of lysine and arginine on the degradation of lysine by, 384.
—, effect of dietary protein level on plasma cholesterol turnover and fecal steroid excretion in, 407.
—, effect of vitamin D_3 and other parameters on intestinal absorption of phosphate in, 586.
— fed raw or heated soybean meal, digestion and absorption of protein along the intestinal tract, 1291.
—, lipid absorption and secretion in: effect of raw soybean meal, 1299.
—, lysine and sulfur-amino acid requirements at two stages of growth, 117.
—, mode of action of selenium and vitamin E in prevention of exudative diathesis in, 1502.
—, nutritional effectiveness of 1,25-dihydroxycholecalciferol in preventing rickets in, 681.
—, selenium-deficient, biochemical and histochemical studies of the pancreas of, 444.
—, toxic effects of excess vitamin E in, 371.
Chicken(s), effect of medium-chain triglycerides and dietary protein on cholesterol absorption and deposition in, 923.
—, effect on uric acid synthesis of the infusion of various levels of ammonium acetate or glutamine in, 1727.
—, effects of dietary manipulation on adipose tissue glycerokinase activity and plasma metabolite levels in, 890.
— fed high and low protein diets, effect of infused glutamine on uric acid synthesis in, 526.
— fed a 20% protein diet, comparative effect of intravenously administered nitrogenous compounds on uric acid synthesis in, 1208.
— gastrointestinal tract, magnesium absorption and secretion along the, 875.
—, influence of food intake frequency on 26-^{14}C-cholesterol turnover in pullets fed a basal and cholesterol-enriched diet, 706.
—, laying; absorption and secretion of fatty acids and bile acids in the intestine of, 543.
Child, preschool, evaluation by rat-feeding tests of linear programming techniques in formulating diets for, 179.
Cholesterogenesis, hepatic, and activity of certain liver enzymes in rats as related to liver cholesterol concentration, 1119.
Cholesterol absorption and deposition in the chicken, effect of medium-chain triglycerides and dietary protein on, 923.
— absorption and intestinal bile acids in the germ-free rat, 982.
— in blood of prematurely weaned rats fed either a high fat or high carbohydrate diet, 690.
— in chick plasma, turnover of, and fecal steroid excretion, effect of dietary protein level on, 407.
— and cholic acid, dietary; effect on liver carbohydrate metabolism enzymes, 93.
—, crystalline, dissolved in lard: hypercholesterolemic effect of, compared with that of egg yolk in female rat, 1400.
— in plasma of calves, depression of by supplementing a high cholesterol liquid diet with dry feed, 1533.
— in serum and the glycocholic:taurocholic acid ratio of the rat, effect of dietary sulfur on, 1561.
Cholesterol-26-^{14}C turnover in pullets fed a basal and cholesterol-enriched diet, effect of food intake frequency on, 706.
Cholic acid and cholesterol, dietary; effect on liver carbohydrate metabolism enzymes, 93.
CHOU, C. See Prothro, J., 786.
CHOW, C. K., K. REDDY AND A. L. TAPPEL. Effect of dietary vitamin E on the activities of the glutathione peroxidase system in rat tissues, 618.
CHRAPPA, V. See Bobek, P., 706.
Chromium absorption in rats, effect of chelating agents on, 1182.
— and tungsten, effect on L-ascorbic acid metabolism in rats and chicks, 509.
CHUNG, E., P. GRIMINGER AND H. FISHER. The lysine and sulfur amino acid requirements at two stages of growth in chicks, 117.
Circadian rhythm of hepatic glycogen, plasma corticosterone and insulin, and nitrogen and energy utilization in rats, effect of protein feeding schedule on, 866.
— in hepatic tyrosine transaminase, physiological regulation of: schedule of protein ingestion as a determinant factor, 251.
CLARK, H. E. See Al-Ani, M. R., 515.
CLEMENS, E. T., AND R. R. JOHNSON. Influence of dietary nitrogen source, concentrate level and biuret level on the adaptation of rumen microorganisms to biuret as a nonprotein nitrogen source, 1406.
—. See Johnson, R. R., 494.
CLIFFORD, A. J. See Prior, R. L., 1099.

Closure (cessation of uptake of macromolecules by intestinal epithelium) in neonatal guinea pig, hamster and rabbit, and transport into blood, 744.
— and transport to the blood in piglets, effect of dietary regimen on, 751.
Cobalt intake in sheep, vitamin B-12 production and absorption, 1646.
COHEN, P. A., K. SCHNEIDMAN, F. GINSBERG-FELLNER, J. A. STURMAN, J. KNITTLE AND G. E. GAULL. High pyridoxine diet in the rat: possible implications for megavitamin therapy, 143.
Collagen formation impaired in the scorbutic channel catfish, 1359.
COMBS, G. F., JR. See Noguchi, T., 444.
CONNOR, M. A. See Saunders, R. M., 530.
Contraceptives, oral; effect of dietary lipids on plasma and hepatic lipids and on blood clotting properties in rats fed, 1270.
Conversion efficiency of tryptophan to niacin in humans, 1195.
COOK, C. See Watson, J. J., 1521.
COOK, D. A. Availability of magnesium: balance studies in rats with various inorganic magnesium salts, 1365.
COOK, R. A. See Radke, F. H., 285.
Copper depletion and repletion in the growing rat, effect on anemia, iron storage and ceruloplasmin, 196.
—, dietary, effect on weight gain, hematology and liver copper and iron storage in young pigs, 713.
— nutriture, effect on urinary excretion of tryptophan metabolites and amino acids by the rat, 1764.
CORNER, A. H. See Kramer, J. K. G., 1696.
CORWIN, R. M. See Yarrington, J. T., 231.
COTTINI, E. P., D. L. GALLINA AND J. M. DOMINGUEZ. Urea excretion in adult humans with varying degrees of kidney malfunction fed milk, egg or an amino acid mixture: assessment of nitrogen balance, 11.
COURSIN, D. G. See Stewart, C. N., 462.
COUSINS, R. J., A. K. BARBER AND J. R. TROUT. Cadmium toxicity in growing swine, 964.
CROSBY, L. O. See Wang, S., 384.
Cyclopropene fatty acids, hepatic stearoyl CoA desaturase activity in mice as affected by early postnatal dietary cyclopropene fatty acids, 904.
Cytomegalia, renal, caused by feeding alkali-treated soyprotein to rats, 569.
CZAJKA-NARINS, D. M., S. A. MILLER AND A. M. BROWNING. Studies of the protein requirement of the neonatal rat, 1608.

D

DALLMAN, P. R., AND E. C. MANIES. Protein deficiency: contrasting effects on DNA and RNA metabolism in rat liver, 1311.
—, and —. Protein deficiency: turnover of protein and reutilization of amino acid in cell fractions of rat liver, 257.
DANIEL, L. J. See Gray, L. F., 1764.
DDT, effect of protein and methionine on vitamin A liver storage in rats fed, 218.
DECLUE, L. W. See Wilcke, H. L., 179.
Defects, congenital, after transitory gestational zinc deficiency in rats, 649.
DE HAAS, H. See Radke, F. H., 285.
DEINDOERFER, F. H. See Yoshimura, N. N., 1256.
DELUCA, H. F. See Zile, M., 308.
Dental caries in the rat, effects of whole grain products, phosphates and tin on, 1528.
2-Deoxy-D-glucose, effects of long-term administration on food intake and weight gain in rats, 730.
Dermal symptoms resembling those of EFA deficiency in immature hypophysectomized rats, 74.
Desaturase, stearoyl-CoA, hepatic activity of in mice as affected by early postnatal dietary cyclopropene fatty acids, 904.
Development, cellular, of kidney in progeny of protein-deficient rats, influence of increased postnatal nutrient intake on, 929.
—, neonatal, of the rat, as a function of dietary protein level, 1608.
—, prenatal and postnatal, after transitory gestational zinc deficiency in rats, 649.
Diammonium citrate and urea, comparison of as sources of nonspecific nitrogen for human adults, 664.
Diathesis, exudative, in chicks; mode of action of selenium and vitamin E in prevention of, 1502.
Dietary change: effect of protein and carbohydrate levels on liver enzyme activities in quail, 625.
Diethylstilbestrol fed to beef steers: effect on feedlot performance and blood plasma amino acid patterns, 1131.
Digestibility of alfalfa protein concentrates, measurement of by in vivo and in vitro methods, 530.
1,25-Dihydroxycholecalciferol, nutritional effectiveness of in preventing rickets in chicks, 681.
DIORIO, L. P., S. A. MILLER AND J. M. NAVIA. The separate effects of protein and calorie malnutrition on the development and growth of rat bones and teeth, 856.
DIRIGE, O. V., M. JACOB, M. WANG, M. E. SWENDSEID AND J. D. KOPPLE. Transketolase activity in tissues of uremic rats, 1723.
Disaccharidase activity, intestinal, in the rat, effect of protein-deficient diets with various amounts of carbohydrate on, 1716.
Diurnal changes in fatty acid patterns of rat liver lipids, 899.
DNA synthesis in rat liver: contrasting effects of protein deficiency on RNA synthesis and on, 1311.
— synthesis in rat skin, effect of zinc deficiency and wounding on, 548.
DOBBING, J. See Smart, J. L., 1327.
Dog(s), effects of dietary fat and of a lipolytic agent on postprandial free fatty acids and fasting serum lipids in, 1200.
—, feeding study of a used, partially hydrogenated soybean oil, frying fat in, 1248.
DOMINGUEZ, J. M. See Cottini, E. P., 11.
DRISKELL, J. A., L. A. STRICKLAND, C. H. POON AND D. P. FOSHEE. The vitamin B_6 requirement of the male rat as determined by behavioral patterns, brain pyridoxal phosphate and nucleic acid composition and erythrocyte alanine aminotransferase activity, 670.
DROR, Y., H. F. SASSOON, J. J. WATSON, D. O. MACK AND B. C. JOHNSON. Fat versus sucrose

as the nonprotein calorie portion of the diet, 342.
—. See Sassoon, H. F., 321.
Drug metabolism in the rat, effects of dietary protein quality on, 1425.
— in rat liver microsomes, effects of protein–calorie malnutrition on, 811.
DRUSACK, L. M. See Oscai, L. B., 412.
DRYDEN, L. P., J. BITMAN, T. R. WRENN, AND J. WEYANT. Influence of feeding DEAE Sephadex on growth, lactation and lipid utilization in the rat, 36.
—. See Cecil, H. C., 43.
Duck, vitamin E–selenium deficiency and its influence on avian malarial infection in, 231.
DYER, I. A. See Chen, N. S. C., 1182.
—. See Tsai, A. C., 93, 1119.

E

Editorial paper: M. L. Scott, The selenium dilemma, 803.
EHRLICH, H. See Yoshimura, N. N., 1256.
ELLIOT, J. M. See Hedrich, M. F., 1646.
ELSON, C. See Peng, Y., 1489.
ELSON, C. E. See Wadhwa, P. S., 899.
ELY, D. G. See Nishimuta, J. F., 49.
Embryonic wastage during pregnancy in rats fed low and high energy diets, changes of, 1652.
ENDO, S. See Niiyama, Y., 207.
Energy, dietary level of, effect on embryonic wastage during pregnancy in rat, 1652.
— metabolism in atherosclerosis-resistant and -susceptible pigeons, 189.
— metabolism of growing rats, effects of dietary protein content and ratio of fat to carbohydrate calories, 167.
—, nitrogen and sulfur, utilization of by adolescent boys fed three levels of protein, 786.
— and protein levels, dietary: interactions of on channel catfish, 1339.
— source in the diet, sucrose vs. fat, effects on rat liver polysome patterns, 1521.
ENWONWU, C. O., AND V. GLOVER. Alterations in cerebral protein metabolism in the progeny of protein–calorie-deficient rats, 61.
—, AND K. JACOBSON. Relation between adrenal cortex and hepatic protein synthesis in protein–calorie-deficient rats, 290.
Enzyme(s) activities in liver and intestinal mucosa of rats fed nonprotein nitrogen diets supplemented with nicotinamide, succinate and pyridoxine, 1099.
— activities in rat liver, effect of dietary medium-chain triglycerides on, 829.
— activity in prematurely weaned rats, effects of feeding a high fat or high carbohydrate diet on, 690.
— involved in branched-chain amino acid catabolism in the chick, dietary influences on the activities of, 757.
— in quail liver, activities of, effect of dietary protein and carbohydrate levels on, 625.
— in rat liver; liver cholesterol concentration in relation to hepatic cholesterogenesis and activity of, 1119.
Essential amino acid, diets devoid of one; effect on pregnancy in rats maintained by ovarian steroids, 207.
EVANS, J. L., AND P. A. ABRAHAM. Anemia, iron storage and ceruloplasmin in copper nutrition in the growing rat, 196.
EVANS, R. M., AND R. W. SCHOLZ. Development of renal gluconeogenesis in chicks fed high fat and high protein "carbohydrate-free" diets, 242.
Excess calories, effect on protein requirements of young men fed egg or rice protein, 1673.
Exercise, detailed body composition analysis on female rats subjected to, 412.
— and feeding, effects on adipose tissue glycerokinase activity and body composition of lean and obese mice, 1212.

F

Fasting, long-term, effect on lipogenesis in cattle, 468.
Fasting–refeeding, effect on portal absorption of protein and small peptides in rat, 1745.
Fat calories, ratio to carbohydrate calories, and level of protein in diet, effects on energy metabolism and body composition of growing rats, 167.
— depot weights and body composition of rats as influenced by ration-fed dams during lactation and ration-fed rats after weaning, 477.
—, dietary: a feeding study of a used, partially hydrogenated soybean oil, frying fat in dogs, 1248.
—, dietary, and inositol deficiency: an intestinal lipodystrophy in the gerbil, 302.
—, metabolism, growth, lipid composition and myocardial lesions of rats fed rapeseed oils, 1696.
— versus sucrose as the nonprotein calorie portion of the diet, 342.
Fats, polyunsaturated, and vitamin E, measurement and spectral characteristics of fluorescent pigments in rat tissues as a function of, 908.
Fatty acid(s) composition of red cells in mature rats fed an essential fatty acid-deficient diet, effect of pyridoxine on, 1548.
— content and type of carbohydrate in rat diet, joint effects on changes in lipid metabolism induced by amino acid imbalance, 991.
— profiles of rat liver lipids, diurnal changes in, 899.
— synthesis in rat liver, effect of dietary medium-chain triglycerides on, 829.
— synthetase and microsomal glycerophosphate acyltransferase activities in rat liver, dietary regulation of, 1414.
—, volatile, glucose and insulin levels in plasma of sheep fed different feeds, relationship between, 488.
FEATHERSTON, W. R., AND R. A. FREEDLAND. Influence of dietary protein and carbohydrate levels on liver enzyme activities in quail, 625.
—, AND C. W. HORN. Dietary influences on the activities of enzymes involved in branched-chain amino acid catabolism in the chick, 757.
Feed conversion in rainbow trout: response to various protein/energy ratios in a test diet, 916.
Feeding schedule of protein ingestion as a determinant factor in physiological regulation of the circadian rhythm in hepatic tyrosine transaminase, 251.
Feedlot performance and blood plasma amino

acid patterns in beef steers fed diethylstilbestrol, 1131.
FELAND, B., E. G. FUQUA AND J. T. SMITH. Effect of dietary sulfur on serum cholesterol and the glycocholic:taurocholic acid ratio of the rat, 1561.
Fetus rat: effects of sulfur depletion, protein restriction and indole or salicylamide administration during pregnancy on, 1279.
FILER, L. J., JR., S. J. FOMON, T. A. ANDERSON, D. W. ANDERSEN, R. R. ROGERS AND R. L. JENSEN. Growth, serum chemical values and carcass composition of Pitman-Moore miniature pigs during the first eight weeks of life, 425.
—. See Stegink, L. D., 1138, 1146.
Fish protein concentrate, availability of the fluoride in, 26.
FISHER, H. See Adamson, I., 1306.
—. See Chung, E., 117.
—. See Kenney, J. J., 923.
FISHER, L. See Schemmel, R., 477.
Flavonoids of dried-grass silage fed to rats, stimulating effect of on basal metabolic rate, 1658.
FLETCHER, B. See Reddy, E. K., 908.
Fluoride, availability in fish protein concentrate, 26.
—, effect of on bone formation and strength in Japanese quail, 1431.
—, effect on reproduction in mice, 1319.
— and magnesium, dietary, interaction of in guinea pigs, 841.
Folic acid coenzyme pools in vitamin B_{12} deficient and supplemented rats, effect of methionine on, 363.
FOMON, S. J. See Filer, L. J., Jr., 425.
Food intake, regulation of: amino acid toxicity and changes in rat brain and plasma amino acids, 608.
— and weight gain in rats, effects of long-term administration of 2-deoxy-D-glucose on, 730.
Formamidase activity, intestinal, in the rabbit, 397.
FOSHEE, D. P. See Driskell, J. A., 670.
FOX, H. M. See Kies, C., 664, 1155.
FREEDLAND, R. A. See Featherston, W. R., 625.
Free fatty acids and fasting serum lipids in the dog, effects of dietary fat and of a lipolytic agent on postprandial, 1200.
Frequency of feeding, effect on 26-^{14}C-cholesterol turnover in pullets fed a basal and cholesterol-enriched diet, 706.
FUJITA, Y. See Inoue, G., 1673.
FUJIWARA, M. See Itokawa, Y., 88, 438.
FUQUA, E. G. See Feland, B., 1561.

G

GALLAGHER, A. See Hegsted, D. M., 302.
GALLINA, D. L. See Cottini, E. P., 11.
GALLO-TORRES, H. E., AND J. LUDORF. Comparison of the portal absorption of protein and small peptides in the fed and fasted rat, 1745.
GARDNER, L. I. See Muzzo, S., 314.
GAULL, G. E. See Cohen, P. A., 143.
Gerbil, inositol deficiency in; dietary effects on the intestinal lipodystrophy, 1448.
—, inositol deficiency: an intestinal lipodystrophy in, 302.
GERSHOFF, S. See Makris, A., 1352.
GERSHOFF, S. N. See Huber, A. M., 1175, 1739.
GERSHON, B. See Konijn, A. M., 378.
GILBREATH, R. L., AND J. R. TROUT. Effects of early postnatal dietary protein restriction and repletion on porcine muscle growth and composition, 1637.
GINSBERG-FELLNER, F. See Cohen, P. A., 143.
GINTER, E. See Bobek, P., 706.
GIPP, W. F., W. G. POND, J. TASKER, D. VAN CAMPEN, L. KROOK AND W. J. VISEK. Influence of level of dietary copper on weight gain, hematology and liver copper and iron storage of young pigs, 713.
GIRARD-GLOBA, A., AND G. BOURDEL. Physiological regulation of the circadian rhythm in hepatic tyrosine transaminase: schedule of protein ingestion as a determinant factor, 251.
Girls, teenage, pregnant; nitrogen retention, total body ^{40}K and weight gain in, 772.
GLOVER, V. See Enwonwu, C. O., 61.
Glucagon administration and dietary protein content, effects on tyrosine metabolism and toxicity in rat, 1594.
Glucocorticoids in liver of protein–calorie malnourished rats, relation to adrenal cortex, 290.
Gluconeogenesis from amino acids in mature wether sheep, 1587.
—: contribution of the cytosol and mitochondrial pathways to phosphoenolpyruvate formation during, 1489.
—, renal, in chicks fed high fat and high protein "carbohydrate-free" diets, 242.
Glucose, insulin and volatile fatty acids in plasma of sheep fed different feeds, relationship between, 488.
— in plasma of rats, effects of long-term administration of 2-deoxy-D-glucose on food intake, weight gain and, 730.
Glucose-6-phosphate dehydrogenase, malic enzyme and total liver lipid in the rat, effect of various sugars on hepatic, 697.
— in rat liver, dietary regulation of; starvation and dietary carbohydrate induction, 321.
Glutamate, monosodium, metabolism in the neonatal pig: conversion of administered glutamate into other metabolites in vivo, 1146.
—, monosodium, metabolism in neonatal pig: effect of load on plasma, brain, muscle and spinal fluid free amino acid levels, 1138.
Glutamine or ammonium acetate infusion at various levels in chickens, effect on uric acid synthesis, 1727.
— infusion, effect on uric acid synthesis in chickens fed high and low protein diets, 526.
Glutathione peroxidase system in rat tissues, effect of dietary vitamin E on the activities of, 618.
Glycerokinase activity of adipose tissue and body composition of lean and obese mice, effects of feeding and exercise on, 1212.
— activity in adipose tissue and plasma metabolite level in chickens, effects of dietary manipulation on, 890.
Glycerol kinase activity in liver and kidney of chicks fed high fat and high protein "carbohydrate-free" diets, 242.
L-Glycerol-3-phosphate dehydrogenase activity in liver and kidney of chicks fed high fat and high protein "carbohydrate-free" diets, 242.
Glycerophosphate acyltransferase activities, micro-

somal, in rat liver, dietary regulation of fatty acid synthetase and of, 1414.
GODIN, C. See Hanna, N., 937.
Goitrogen in soybean flower, purification and mode of action, 378.
Gossypol, bound, effect on the absorption of iron by rats, 882.
—, intravenous injection of in swine, effect on iron utilization, 851.
Gourami, absorption and metabolism of oleyl alcohol in, 600.
—; wax esters in fish; metabolism of dietary palmityl palmitate in, 1441.
GRAHAM, G. G., AND R. P. PLACKO. Postprandial plasma free methionine as an indicator of dietary methionine adequacy in the human infant, 1347.
GRANDE, F. See Prigge, W. F., 1200.
Grass silage and silage flavonoids fed to rats, stimulating effect of on basal metabolic rate, 1658.
GRAY, L. F., AND L. J. DANIEL. Effect of copper status on the urinary excretion of tryptophan metabolites and amino acids by the rat, 1764.
GREENWOOD, M. R. C. See Johnson, P. R., 738.
GREGORY, T. See Muzzo, S., 314.
GRIMINGER, P. See Chung, E., 117.
Growth and bone development in rats as affected by maternal protein deprivation and postnatal food supply, 792.
— hormone, anterior pituitary, in vitro synthesis of as affected by maternal protein deprivation and postnatal food supply, 1012.
—, effect on progeny of rats malnourished during pregnancy or lactation, 273.
—, serum chemical values and carcass composition of Pitman-Moore miniature pigs during the first 8 weeks of life, 425.
— of swine with different propensities to fatten, lipogenic enzyme activity in adipose tissue during, 353.
— and vitamin B-6, administration of to vitamin B-6-deficient rats: effect on ^{14}C-α-aminoisobutyric acid uptake, 1352.
^{14}C-Guanidino-arginine, reutilization of for protein synthesis in cell fractions of rat liver under conditions of protein deficiency, 257.
GUBIN, J. See Peng, Y., 608.
GUENTER, W., AND J. L. SELL. Magnesium absorption and secretion along the gastrointestinal tract of the chicken, 875.
GUGGENHEIM, K. See Konijn, A. M., 378.
Guide for authors, 153.
Guinea pig, hamster and rabbit, neonatal, cessation of uptake of macromolecules in intestinal epithelium (closure) and transport into blood, 744.
—, interaction of dietary fluoride and magnesium in, 841.
—, nitrite-induced methemoglobin in; influence of diets containing beets with varying amounts of nitrate, and the effect of ascorbic acid and methionine, 419.
— and rat, effects of large doses of vitamin C in, 1688.

H

HADJIMARKOS, D. M. Letters to the editor: selenium and dental caries susceptibility, 1634.
—. See Shearer, T. R., 553.
HAEFFNER, E. W., AND O. S. PRIVETT. Development of dermal symptoms resembling those of an essential fatty acid deficiency in immature hypophysectomized rats, 74.
HAHN, P. Immediate and late effects of premature weaning and of feeding a high fat or high carbohydrate diet to weanling rats, 690.
Hamster, guinea pig and rabbit, neonatal, cessation of uptake of macromolecules in intestinal epithelium (closure) and transport into blood, 744.
HANFORD, H. See Hegsted, D. M., 302.
HANNA, N., AND C. GODIN. Free and membrane-bound liver polysome patterns of rats with different dietary intakes of phenylalanine, 937.
HARPER, A. E. See Ip, C. C. Y., 1594.
—. See Peng, Y., 608.
HARRIS, S. J. See Cecil, H. C., 43.
HARTSOOK, E. W., T. V. HERSHBERGER AND J. C. M. NEE. Effects of dietary protein content and ratio of fat to carbohydrate calories on energy metabolism and body composition of growing rats, 167.
HAUSSLER, M. R. See McNutt, K. W., 681.
HAYES, K. C. See Hegsted, D. M., 302.
—. See Kroes, J. F., 1448.
Heated fat for rats, nutritional value of, effect of protein and vitamin levels on, 1665.
HEDRICH, M. F., J. M. ELLIOT AND J. E. LOWE. Response in vitamin B-12 production and absorption to increasing cobalt intake in the sheep, 1646.
HEGSTED, D. M., K. C. HAYES, A. GALLAGHER AND H. HANFORD. Inositol deficiency: an intestinal lipodystrophy in the gerbil, 302.
—. See Kroes, J. F., 1448.
HEITMANN, R. N., W. H. HOOVER AND C. J. SNIFFEN. Gluconeogenesis from amino acids in mature wether sheep, 1587.
HEMANS, C., F. KUMMEROW AND E. G. PERKINS. Influence of protein and vitamin levels on the nutritional value of heated fats for rats, 1665.
Hematology, weight gain, liver copper and iron storage in young pigs, effect of level of dietary copper on, 713.
HENDERSON, G. R. See Bartov, I., 1400.
HENDERSON, L. M. See McGown, E., 109.
HENNEMAN, H. A. See Bergen, W. G., 575.
HERMAN, D. L., AND F. H. SMITH. Effect of bound gossypol on the absorption of iron by rats, 882.
—. See Skutches, C. L., 851.
HERSHBERGER, T. V. See Hartsook, E. W., 167.
HIGGS, D. J. See Levander, O. A., 536.
HIGO, K. See Naito, C., 730.
HIRSCH, J. See Johnson, P. R., 738.
HOFFA, D. E. See Kakade, M. L., 1772.
HOLLOSZY, J. O. See Oscai, L. B., 412.
HOOD, R. L., AND C. E. ALLEN. Lipogenic enzyme activity in adipose tissue during the growth of swine with different propensities to fatten, 353.
HOOVER, W. H. See Heitmann, R. N., 1587.
HOPKINS, D. T. See Wilcke, H. L., 179.
HORN, G. W. See Featherston, W. R., 757.
HOUK, J. M. See Mersmann, H. J., 821.
HOWE, J. M. See Al-Ani, M. R., 515.
HSU, J. M. See Stephan, J. K., 548.

HUBER, A. M., AND S. N. GERSHOFF. Effect of zinc deficiency in rats on insulin release from the pancreas, 1739.
—, and —. Effects of dietary zinc on zinc enzymes in the rat, 1175.
Human (*see also* Man).
Human, adolescent male, fed three levels of protein; utilization of nitrogen, energy and sulfur by, 786.
—, adult, with kidney malfunction: urea excretion and nitrogen balance in, 11.
—, adult, utilization of 1,3-butanediol and nonspecific nitrogen in, 1155.
—, efficiency of conversion of tryptophan to niacin in, 1195.
—, elderly, plasma tryptophan response curve and tryptophan requirements of, 1220.
—, infant: postprandial plasma free methionine as an indicator of dietary methionine adequacy in, 1347.
HUNT, J. R. See Kramer, J. K. G., 1696.
HURLEY, L. S., AND P. B. MUTCH. Prenatal and postnatal development after transitory gestational zinc deficiency in rats, 649.
HURWITZ, S., A. BAR, M. KATZ, D. SKLAN AND P. BUDOWSKI. Absorption and secretion of fatty acids and bile acids in the intestine of the laying fowl, 543.
—. See Bielorai, R., 1291.
—. See Sklan, D., 1299.
Hydroxyproline concentration of plasma increased in vitamin A-deficient rat, 308.
Hypercholesterolemia, experimental, in rats; effect of various sulfur-containing amino acids, 88.
Hypophysectomy of immature rat, development of dermal symptoms resembling those of EFA deficiency, 74.
Hypoproteinemia in rat produced by feeding lysine-deficient wheat gluten, 80.

I

INGLE, D. L., D. E. BAUMAN, R. W. MELLENBERGER AND D. E. JOHNSON. Lipogenesis in the ruminant: effect of fasting and refeeding on fatty acid synthesis and enzymatic activity of sheep adipose tissue, 1479.
Inositol deficiency in gerbils: dietary effects on the intestinal lipodystrophy, 1448.
— deficiency: an intestinal lipodystrophy in the gerbil, 302.
INOUE, G., Y. FUJITA AND Y. NIIYAMA. Studies on protein requirements of young men fed egg protein and rice protein with excess and maintenance energy intakes, 1673.
—. See Niiyama, Y., 207.
INOUE, K. See Itokawa, Y., 88.
Insufficiency, vascular, effects on placental ribonuclease in the rat, 213.
Insulin and amino acid concentrations in plasma of rats given an adequate or low protein diet, 720.
—, glucose and volatile fatty acids in plasma of sheep fed different feeds, relationship between, 488.
— release and adipose cellularity in the Zucker rat, effect of early nutrition on, 738.
— release from the pancreas in rat, effect of zinc deficiency on, 1739.
Intestinal absorption of protein and small peptides in the fed and fasted rat, 1745.
Intestine, small; effects of maternal dietary protein level on growth of in fetus and suckling rat pup, 454.
—, rat; effect of dietary protein on the synthesis of retinol from ^{14}C-β-carotene in, 202.
IP, C. C. Y., AND A. E. HARPER. Effects of dietary protein content and glucagon administration on tyrosine metabolism and tyrosine toxicity in the rat, 1594.
Iron absorption from ligated segments of rat intestine, enhancement by histidine, cysteine and lysine; effects of removing ionizing groups and of stereo isomerism, 139.
—, absorption of by rats, effect of bound gossypol on, 882.
— and copper storage in liver of young pigs, effect of level of dietary copper on weight gain, hematology and, 713.
— deficiency, nutritional, as a determinant of host resistance in the rat, 1554.
— storage, anemia and ceruloplasmin in copper nutrition in the growing rat, 196.
— utilization in swine, effect of intravenous gossypol injection on, 851.
IRWIN, M. I., AND E. W. KIENHOLZ. Monograph: a conspectus of research on calcium requirements of man, 1019.
ITOH, H., T. KISHI AND I. CHIBATA. Comparative effects of casein and amino acid mixture simulating casein on growth and food intake in rats, 1709.
ITOKAWA, Y., AND M. FUJIWARA. Changes in tissue magnesium, calcium and phosphorus levels in magnesium-deficient rats in relation to thiamin excess or deficiency, 438.
—, K. INOUE AND —. Effect of S-methylcysteine sulfoxide, S-allylcysteine sulfoxide and related sulfur-containing amino acids on lipid metabolism of experimental hypercholesterolemic rats, 88.

J

JACOB, M. See Dirige, O. V., 1723.
JACOBSON, K. See Enwonwu, C. O., 290.
JACOBSON, N. L., M. RICHARD AND P. J. BERGER. Depression of plasma cholesterol in calves by supplementing a high cholesterol liquid diet with dry feed, 1533.
JENSEN, R. L. See Filer, L. J., Jr., 425.
JOHNS, J. T., AND W. G. BERGEN. Studies on amino acid uptake by ovine small intestine, 1581.
JOHNSON, B. C. See Dror, Y., 342.
—. See Sassoon, H. F., 321.
—. See Watson, J. J., 1521.
JOHNSON, D. E. See Ingle, D. L., 1479.
JOHNSON, P. R., J. S. STERN, M. R. C. GREENWOOD, L. M. ZUCKER AND J. HIRSCH. Effect of early nutrition on adipose cellularity and pancreatic insulin release in the Zucker rat, 738.
JOHNSON, R. R., AND E. T. CLEMENS. Adaptation of rumen microorganisms to biuret as an NPN supplement to low quality roughage rations for cattle and sheep, 494.
—. See Clemens, E. T., 1406.

K

KAJIMOTO, M. See Nakagawa, I., 1195.

KAKADE, M. L., D. E. HOFFA AND I. E. LIENER. Contribution of trypsin inhibitors to the deleterious effects of unheated soybeans fed to rats, 1772.

KAMATH, S. K., AND L. ARNRICH. Effect of dietary protein on the intestinal biosynthesis of retinol from ^{14}C-β-carotene in rats, 202.

KARASAWA, Y., AND I. TASAKI. Effect on uric acid synthesis of the infusion of various levels of ammonium acetate or glutamine in chickens, 1727.

—, —, H. O. YOKATA AND F. SHIBATA. Comparative effect of intravenously administered nitrogenous compounds on uric acid synthesis in chickens fed a 20% protein diet, 1208.

—, —, — AND —. Effect of infused glutamine on uric acid synthesis in chicks fed high and low protein diets, 526.

KATZ, M. See Hurwitz, S., 543.

KELLEY, D. S. See Watson, J. J., 1521.

KEMMERER, A. R. See Mehansho, H., 1512.

—. See Peng, Y., 608.

KENNY, J. J., AND H. FISHER. Effect of medium-chain triglycerides and dietary protein on cholesterol absorption and deposition in the chicken, 923.

KHOKHAR, S. A., AND R. L. PIKE. Aldosterone producing capacity of adrenal glands of sodium-restricted pregnant rats, 1126.

Kidney cellular development in progeny of protein-deficient rats, influence of increased postnatal nutrient intake on, 929.

— function in the progeny of protein-deficient rats, 1467.

— malfunction in adult humans: urea excretion and nitrogen balance, 11.

KIENHOLZ, E. W. See Irwin, M. I., 1019.

KIES, C., AND H. M. FOX. Comparison of urea and diammonium citrate as sources of nonspecific nitrogen for human adults, 664.

—, R. B. TOBIN, — AND M. A. MEHLMAN. Utilization of 1,3-butanediol and nonspecific nitrogen in human adults, 1155.

KIHLBERG, R. See Norrlind, B., 1262.

KING, J. C., D. H. CALLOWAY AND S. MARGEN. Nitrogen retention, total body ^{40}K and weight gain in teenage pregnant girls, 772.

KIRKSEY, A. See Moon, W.-H. Y., 123.

—. See Tabacchi, M. H., 1270.

KISHI, K. See Niiyama, Y., 207.

KISHI, T. See Itoh, H., 1709.

KITTS, W. D. See Ross, J. P., 488.

KNITTLE, J. See Cohen, P. A., 143.

KOHLER, G. O. See Saunders, R. M., 530.

KONIJN, A. M., B. GERSHON AND K. GUGGENHEIM. Further purification and mode of action of a goitrogenic material from soybean flour, 378.

KOPPLE, J. D. See Dirige, O. V., 1723.

KRAMER, J. K. G., S. MAHADEVAN, J. R. HUNT, F. D. SAUER, A. H. CORNER AND K. M. CHARLTON. Growth rate, lipid composition, metabolism and myocardial lesions of rats fed rapeseed oils (*Brassica campestrist* var. Arlo, Echo and Span, and *B. napus* var. Oro), 1696.

KROES, J. F., D. M. HEGSTED AND K. C. HAYES. Inositol deficiency in gerbils: dietary effects on the intestinal lipodystrophy, 1448.

KROOK, L. See Gipp, W. F., 713.

KUMMEROW, F. See Hemans, C., 1665.

KWONG, E. See Barnes, R. H., 273.

L

Lactase, intestinal, activity in young rats; effect of dietary lactose on, 392.

Lactation, growth and lipid utilization in rat, effect of feeding DEAE Sephadex on, 36.

—: role of dietary protein and calories in appetite regulation in the rat, 347.

Lactose, dietary, effect on intestinal lactase activity in young rats, 392.

LAGALLY, H. R. See Stillings, B. R., 26.

Lamb(s) fed soybean meal treated with heat, formalin and tannic acid, nitrogen metabolism in, 49.

—, tissue sulfhydryls in selenium-deficient rat and, 336.

LANGEVIN, M. L. See Noguchi, T., 444.

Lean body mass of female rats subjected to a program of swimming, 412.

LECCE, J. G. Effect of dietary regimen on cessation of uptake of macromolecules by piglet intestinal epithelium (closure) and transport to the blood, 751.

—, AND C. W. BROUGHTON. Cessation of uptake of macromolecules by neonatal guinea pig, hamster and rabbit intestinal epithelium (closure) and transport into blood, 744.

LEE, C. Y. See Stoewsand, G. S., 419.

LEE, D. J., AND G. B. PUTNAM. Response of rainbow trout to varying protein/energy ratios in a test diet, 916.

LEE, Y., AND I. J. LICHTON. Partial purification of rat urinary anorexigenic substance, 1616.

LEICHTER, J. Effect of dietary lactose on intestinal lactase activity in young rats, 392.

—. See Adams, J. L., 1716.

LERNER, J., AND D. VAN CAMPEN. Letters to the editor: amino acid uptake, 1519.

Letters to the Editor: Amino acid uptake, 1519; selenium and dental caries susceptibility, 1634; vitamin A contamination in commercial stabilized vitamin E, 152.

LEVANDER, O. A., V. C. MORRIS, D. J. HIGGS AND R. N. VARMA. Nutritional interrelationships among vitamin E, selenium, antioxidants and ethyl alcohol in the rat, 536.

LEVEILLE, G. A. See Wiley, J. H., 829.

—. See Yeh, S. C., 407.

LEVITSKY, D. A. See Barnes, R. H., 273.

LICHTON, I. J. See Lee, Y., 1616.

LIENER, I. E. See Kakade, M. L., 1772.

Linear programming techniques in formulating human diets, evaluation of by rat-feeding tests, 179.

LINZ, M. See Prothro, J., 786.

Lipid(s) absorption and secretion in the chick: effect of raw soybean meal, 1299.

— and bile acids, absorption and secretion of in the intestine of laying hens, 543.

—, dietary, effect on plasma and hepatic lipids and on blood clotting properties in rats fed oral contraceptives, 1270.

— (fasting) and postprandial free fatty acids in serum of dog, effects of dietary fat and of a lipolytic drug on, 1200.
— metabolism and liver lipid content of rats fed a protein-free diet, effect of methionine on, 54.
— utilization, growth and lactation in rat, effect of feeding DEAE Sephadex on, 36.
Lipodystrophy, intestinal, in the gerbil due to inositol deficiency, 302.
—, intestinal, in gerbils: dietary effects of inositol deficiency, 1448.
Lipogenesis in the bovine, effect of adipose tissue site, animal weight, and long-term fasting on, 468.
—, in vitro, in young swine, effect of diet and weaning age on, 821.
— in the ruminant: effect of fasting and refeeding on fatty acid synthesis and enzymatic activity of sheep adipose tissue, 1479.
Lipogenic enzymes, activity of in adipose tissue during the growth of swine with different propensities to fatten, 353.
Lipolytic drug and dietary fat, joint effects of postprandial free fatty acids and fasting serum lipids in the dog, 1200.
Liver cholesterol concentration in relation to hepatic cholesterogenesis and activity of certain liver enzymes in rats, 1119.
— enzyme activities in quail, effect of dietary protein and carbohydrate levels on, 625.
— lipid content and lipid metabolism of rats fed a protein-free diet, effect of methionine on, 54.
— lipid content of rats, effect on of various carbohydrates in a repletion diet after protein depletion, 225.
— lipids of rat, diurnal changes in the fatty acid patterns of, 899.
— metabolite levels, redox ratios and phosphorylation states in thiamin-deficient rats, 267.
Liver perfusion, rat, to study the effect of amino acids on ribosome aggregation and protein synthesis, 109.
— of rat, dietary regulation of lipogenesis and microsomal glycerophosphate acyltransferase activities in, 1414.
LOH, H. J., AND C. P. BERG. Intestinal pyrrolase and formamidase activities in the rabbit, 397.
Longevity of the rat, influence of protein under- and overnutrition on spontaneous tumor prevalence and, 944.
LOOSLI, J. K. Clive Maine McCay—a biographical sketch (1898–1967), 1.
Lordosis caused by vitamin C deficiency in intensively fed caged channel catfish, 134.
LOVELL, R. T. Essentiality of vitamin C in feeds for intensively fed caged channel catfish, 134.
LOWE, J. E. See Hedrich, M. F., 1646.
LUDORF, J. See Gallo-Torres, H. E., 1745.
LYNCH, A. See Smart, J. L., 1327.
Lysine added in varying levels to wheat flour, effect on growth and body composition of young rats, 515.
— deficiency in rat: concomitant impairment in carnitine biosynthesis, 80.
— degradation by chicks, effect of dietary excesses of lysine and arginine on, 384.
— and sulfur-amino acid requirements at two stages of growth in chicks, 117.
Lysine-ketoglutarate reductase activity in chick liver, effect of excess dietary lysine and arginine on, 384.
Lysinoalanine, similarity of the toxic factor in alkali-treated soyprotein to, 569.

M

MACAIRE, I. See Peret, J., 866.
MACK, D. O. See Dror, Y., 342.
MACKELLAR, I. See Prothro, J., 786.
Macromolecules, cessation of uptake of by neonatal guinea pig, hamster and rabbit intestinal epithelium (closure) and transport into blood, 744.
—, cessation of uptake of by piglet intestinal epithelium (closure) and transport to the blood, effect of dietary regimen on, 751.
MAGEE, W. T. See Bergen, W. G., 575.
Magnesium absorption and secretion along the gastrointestinal tract of the chicken, 875.
— availability: balance studies in rats with various inorganic magnesium salts, 1365.
—, calcium and phosphorus levels in tissues of magnesium-deficient rats as related to thiamin excess or deficiency, 438.
— and dietary protein, effect on selected ATP phosphotransferases and neuromuscular behavior in young rats, 1385.
— and fluoride, dietary, interaction of in guinea pigs, 841.
MAHADEVAN, S. See Kramer, J. K. G., 1696.
Maillard reaction, nutritional consequences of: amino acid availability from fructose-leucine and fructose-tryptophan in the rat, 657.
—, nutritional consequences of: response of rats to amino acid supplementation of brown egg albumin, 1731.
MAJUMDER, A. K. See Nandi, B. K., 1688.
MAJUMDER, P. K. See Chatterjee, G. C., 509.
MAKRIS, A., AND S. GERSHOFF. ^{14}C-α-Aminoisobutyric acid uptake in vitamin B-6 deficient rats: effect of growth hormone and vitamin B-6, 1352.
Malaria, avian, in duck; vitamin E–selenium deficiency and its influence on, 231.
Malnutrition, maternal: effects of dietary protein level of the dam on gastrointestinal growth of fetus and suckling rat pup, 454.
—: maternal protein deprivation during pregnancy or lactation in rats and the efficiency of protein utilization in the progeny, 273.
—, protein–calorie, effects on drug metabolism in rat liver microsomes, 811.
—, protein and calorie, their separate effects on development of rat teeth and bones, 856.
— of rats in utero, oxygen consumption of brain mitochondria, 314.
Maltose in total parenteral nutrition of rats, 1256.
Man (*see also* Human)
Man, adult, comparison of urea and diammonium citrate as sources of nonspecific nitrogen for, 664.
—, a conspectus of research on calcium requirements of, 1019.
—, protein requirements in: efficiency of egg protein utilization in young men, 1164.
—, young, protein requirement when fed egg or rice protein with excess and maintenance energy intake, 1673.

MANIES, E. C. See Dallman, P. R., 257, 1311.
MARCH, B. E., E. WONG, L. SEIER, J. SIM AND J. BIELY. Hypervitaminosis E in the chick, 371.
MARGEN, S. See King, J. C., 772.
MARSH, A. C. See Sweeney, J. P., 20.
MARTIN, R. J. See Welton, R. F., 890, 1212.
McCay, Clive Maine, biography of, 1.
McDONALD, J. L., JR., AND G. K. STOOKEY. Influence of whole grain products, phosphates, and tin upon dental caries in the rat, 1528.
McGARRY, P. C., AND D. A. ROE. Development of sulfur depletion in pregnant and fetal rats: interaction of protein restriction and indole or salicylamide administration, 1279.
McGOWN, E., A. G. RICHARDSON, L. M. HENDERSON AND P. B. SWAN. Effect of amino acids on ribosome aggregation and protein synthesis in perfused rat liver, 109.
McNUTT, K. W., AND M. R. HAUSSLER. Nutritional effectiveness of 1,25-dihydroxycholecalciferol in preventing rickets in chicks, 681.
Megavitamin therapy, possible implications from study of metabolic effects in rats of massive doses of pyridoxine, 143.
MEHANSHO, H., Y. PENG, M. G. VAVICH AND A. R. KEMMERER. Limiting amino acids in noog (*Guizottia abyssinca*) as determined by amino acid composition, plasma acid concentrations, and growth of the rat, 1512.
MEHLMAN, M. A. See Kies, C., 1155.
—. See Veech, R. L., 267.
MELLENBERGER, R. W. See Ingle, D. L., 1479.
MENAKER, L., AND J. M. NAVIA. Appetite regulation in the rat under various physiological conditions: the role of dietary protein and calories, 347.
MERSMANN, H. J., J. M. HOUK, G. PHINNEY AND M. C. UNDERWOOD. Effect of diet and weaning age on in vitro lipogenesis in young swine, 821.
MESSER, H. H., W. D. ARMSTRONG AND L. SINGER. Influence of fluoride intake on reproduction in mice, 1319.
Metabolism of dietary fatty alcohol in the gourami, 600.
Metabolites in rat liver, effect of thiamin deficiency on, 267.
Methemoglobinemia in guinea pigs, nitrite-induced: influence of diets containing beets with varying amounts of nitrate, and the effect of ascorbic acid and methionine, 419.
DL-Methionine and protein, effect on vitamin A liver storage in rats fed DDT, 218.
Methionine as a determinant of optimal inorganic sulfate level in the rat diet, 1008.
—, effect on liver lipid content and lipid metabolism of rats fed a protein-free diet, 54.
—, effect on specific folate coenzyme pools in vitamin B_{12} deficient and supplemented rats, 363.
— and lysine requirements at two stages of growth in chicks, 117.
—, postprandial in plasma as an indicator of dietary methionine adequacy in the human infant, 1347.
— utilization for phospholipid formation as affected by dietary protein in the rat, 285.
S-Methylcysteine sulfoxide and other sulfur-containing amino acids, effect on lipid metabolism of experimental hypercholesterolemic rats, 88.
Mice, hepatic stearoyl-CoA desaturase activity as affected by early postnatal dietary cyclopropene fatty acids, 904.
—, influence of fluoride intake on reproduction in, 1319.
—, lean and obese, effects of feeding and exercise on adipose tissue glycerokinase activity and body composition of, 1212.
MICHAELIS, O. E., IV, AND B. SZEPESI. Effects of various sugars on hepatic glucose-6-phosphate dehydrogenase, malic enzyme and total liver lipid of the rat, 697.
MICKELSEN, O. See Shemmel, R., 477.
Microbial adaptation of rumen organisms in sheep to biuret as a nonprotein nitrogen source, influence of dietary nitrogen source, concentrate level and biuret level on, 1406.
Microorganisms in rumen of cattle and sheep, their adaptation to biuret as an NPN supplement to low quality roughage rations, 494.
MILLER, M. See Tontisirin, K., 1220.
MILLER, S. A. See Baggs, R. B., 1554.
—. See Czajka-Narins, D. M., 1608.
—. See DiOrio, L. P., 856.
MIRANDA, C. L., AND R. E. WEBB. Effects of dietary protein quality on drug metabolism in the rat, 1425.
MITCHELL, G. V. See Young, M. L., 218.
Mitochondria in brain of rats malnourished in utero, oxygen consumption by, 314.
— in rat liver, respiratory control and swelling of: effect of ^{60}Co gamma radiation and injected nutrient, 836.
MOLE, P. A. See Oscai, L. B., 412.
Monkey, effect of aspartame on phenylalanine metabolism in, 1460.
—, metabolism of aspartame in, 1454.
Monosodium glutamate metabolism in the neonatal pig: conversion of administered glutamate into other metabolites in vivo, 1146.
— metabolism in neonatal pig: effect of load on plasma, brain, muscle and spinal fluid free amino acid levels, 1138.
MOON, W.-H. Y., AND A. KIRKSEY. Cellular growth during prenatal and early postnatal periods in progeny of pyridoxine-deficient rats, 123.
MORONI, R. I. See O'Dell, B. L., 841.
MORRIS, V. C. See Levander, O. A., 536.
MORRISEY, L. See Barnes, R. H., 273.
MUELLER, J. F. See Ruegamer, W. R., 1496.
MULDOON, E. See Oppermann, J. A., 1454, 1460.
MUNRO, H. N. See Young, V. R., 1756.
MURAI, T. See Andrews, J. W., 766.
Muscle growth and composition in the pig, effects of early postnatal protein restriction and repletion on, 1637.
MUTCH, P. B. See Hurley, L. S., 649.
MUZZO, S., T. GREGORY AND L. I. GARDNER. Oxygen consumption by brain mitochondria of rats malnourished in utero, 314.

N

NAITO, C., AND Y. YOSHITOSHI. Effects of long-term administration of 2-deoxy-D-glucose on food intake and weight gain in rats, 730.

NAKAGAWA, I., T. TAKAHASHI, A. SASAKI, M. KAJIMOTO AND T. SUZUKI. Efficiency of conversion of tryptophan to niacin in humans, 1195.
NAKANISHI, M. See Aoyama, Y., 54.
NANDI, B. K., A. K. MAJUMDER, N. SUBRAMANIAN AND I. B. CHATTERJEE. Effects of large doses of vitamin C in guinea pigs and rats, 1688.
NAVIA, J. M. See DiOrio, L. P., 856.
—. See Menaker, L., 347.
NEE, J. C. M. See Hartsook, E. W., 167.
Neonate, gastrointestinal growth of; effects of maternal dietary protein level on, 454.
NESHEIM, M. C. See Wang, S., 384.
Neuromuscular behavior and selected ATP phosphotransferases in young rats, effect of dietary protein and magnesium on, 1385.
NEWBERNE, P. M. See Young, V. R., 720.
Niacin, conversion of tryptophan to, efficiency of in humans, 1195.
NIIYAMA, Y., K. KISHI, S. ENDO AND G. INOUE. Effect of diets devoid of one essential amino acid on pregnancy in rats maintained by ovarian steroids, 207.
—. See Inoue, G., 1673.
NISHIMUTA, J. F., D. G. ELY AND J. A. BOLING. Nitrogen metabolism in lambs fed soybean meal treated with heat, formalin and tannic acid, 49.
Nitrite-induced methemoglobinemia in guinea pigs: influence of diets containing beets with varying amounts of nitrate, and the effect of ascorbic acid and methionine, 419.
Nitrogen balance in human adults fed 1,3-butanediol and urea, 1155.
— — in progeny of rats malnourished during pregnancy or lactation, 273.
— — in rat, comparison between fat and sucrose as the nonprotein calorie portion of the diet, 342.
— — and urea excretion in adult humans with various degrees of kidney malfunction, 11.
— and energy metabolism of growing rats, effects of dietary protein content and ratio of fat to carbohydrate calories, 167.
—, energy and sulfur, utilization of by adolescent boys fed three levels of protein, 786.
— metabolism in lambs fed soybean meal treated with heat, formalin and tannic acid, 49.
—, nonprotein, supplemented as biuret to low quality roughage rations for cattle and sheep, adaptation of rumen microorganisms to, 494.
—, nonprotein, supplemented with nicotinamide, succinate and pyridoxine; growth and metabolism of rats fed, 1099.
—, nonspecific, comparison of urea and diammonium citrate as sources of for human adults, 664.
— retention, total body ^{40}K and weight gain in teenage pregnant girls, 772.
— utilization and energy utilization, and circadian rhythm of hepatic glycogen, plasma corticosterone and insulin in rats, effect of protein feeding schedule on, 866.
Nitrogenous compounds, intravenously administered to chickens fed a 20% protein diet, effect on uric acid synthesis, 1208.
NOGUCHI, T., A. H. CANTOR AND M. L. SCOTT. Mode of action of selenium and vitamin E in prevention of exudative diathesis in chicks, 1502.
—, M. L. LANGEVIN, G. F. COMBS, JR., AND M. L. SCOTT. Biochemical and histochemical studies of the selenium-deficient pancreas in chicks, 444.
NOLEN, G. A. A feeding study of a used, partially hydrogenated soybean oil, frying fat in dogs, 1248.
Nomenclature policy: Generic descriptors and trivial names for vitamins and related compounds, 159.
Noog meal, limiting amino acids in, as determined by amino acid composition, plasma amino acid concentrations, and growth of the rat, 1512.
NORRLIND, B., AND R. KIHLBERG. A short assay for the estimation of dietary purine compounds, using a rat model system with inhibition of uricase, 1262.

O

Obesity and body composition of rats as influenced by ration-fed dams during lactation and ration-fed rats after weaning, 477.
—, lipogenic enzyme activity in adipose tissue during growth of swine with different propensities toward, 353.
O'DELL, B. L., R. I. MORONI AND W. O. REGAN. Interaction of dietary fluoride and magnesium in guinea pigs, 841.
Oleyl alcohol, absorption and metabolism of in the gourami, 600.
OLSON, C. R., AND F. YOUNG. Energy metabolism in atherosclerosis-resistant and -susceptible pigeons, 189.
OLSON, R. E. See Caddell, J. L., 1385.
OLTJEN, R. R., H. SWAN, T. S. RUMSEY, D. J. BOLT AND B. T. WEINLAND. Feedlot performance and blood plasma amino acid patterns in beef steers fed diethylstilbestrol under ad libitum, restricted, and compensatory conditions, 1131.
OOKAWA, H. See Naito, C., 730.
OPPERMANN, J. A., E. MULDOON AND R. E. RANNEY. Metabolism of aspartame in monkeys, 1454.
—, — and —. Effect of aspartame on phenylalanine metabolism in the monkey, 1460.
Ornithine and arginine: conversion to proline in the chick, 999.
OSCAI, L. B., P. A. MOLE, L. M. DRUSACK AND J. O. HOLLOSZY. Detailed body composition analysis on female rats subjected to a program of swimming, 412.
Ovarian steroids, pregnancy in rats maintained by; effect of diets devoid of one essential amino acid, 207.
Oxygen consumption by brain mitochondria of rats malnourished in utero, 314.

P

PAGE, J. W., AND J. W. ANDREWS. Interactions of dietary levels of protein and energy on channel catfish (*Ictalurus punctatus*), 1339.
Palmityl palmitate absorption and metabolism in the gourami, 1441.
Pancreas, hypertrophy of as a result of trypsin inhibitors in unheated soybeans fed to rats, 1772.
— of rat, effect of zinc deficiency in rat on insulin release from, 1739.

— of selenium-deficient chick, biochemical and histochemical studies of, 444.
Parenteral nutrition of rats, total; role of maltose in, 1256.
Parturition in the zinc-deficient rat, effect of zinc repletion late in gestation on, 973.
PENG, Y., M. BROOKS, C. ELSON AND E. SHRAGO. Contribution of the cytosol and mitochondrial pathways to phosphoenolpyruvate formation during gluconeogenesis, 1489.
—, J. GUBIN, A. E. HARPER, M. G. VAVICH AND A. R. KEMMERER. Food intake regulation: amino acid toxicity and changes in rat brain and plasma amino acids, 608.
—. See Mehansho, H., 1512.
PERET, J., I. MACAIRE AND M. CHANEZ. Schedule of protein ingestion, nitrogen and energy utilization and circadian rhythm of hepatic glycogen, plasma, corticosterone and insulin in rats, 866.
Perinatal malnutrition, effects on cerebral protein metabolism in progeny of rats, 61.
PERKINS, E. G. See Hemans, C., 1665.
PETER, V. See Bobek, P., 706.
Phenylalanine, free and membrane-bound liver polysome patterns of rats with different dietary intakes of, 937.
— metabolism in monkey, effect of aspartame on, 1460.
PHINNEY, G. See Mersmann, H. J., 821.
Phosphate(s), intestinal absorption of in the chick: effect of vitamin D_3 and other parameters, 586.
—, whole grain products and tin, effects on dental caries in the rat, 1528.
Phosphoenolpyruvate carboxykinase activity in liver and kidney of chicks fed high fat and high protein "carbohydrate-free" diets, 242.
—, formation of during gluconeogenesis, contribution of the cytosol and mitochondrial pathways to, 1489.
6-Phosphogluconate dehydrogenase in rat liver, dietary regulation of; starvation and dietary carbohydrate induction, 321.
Phospholipid formation in the rat, utilization of methionine as affected by dietary protein, 285.
Phosphorus and calcium, effects on growth, food conversion, bone ash and hematocrit levels of catfish, 766.
—, calcium and magnesium levels in tissues of magnesium-deficient rats as related to thiamin excess or deficiency, 438.
Phosphorylation states, redox ratios and liver metabolite levels in thiamin-deficient rats, 267.
Pig(s) with different propensities to fatten, lipogenic enzyme activity in adipose tissue during the growth of, 353.
—, effects of early postnatal protein restriction and repletion on muscle growth and composition in, 1637.
—, neonatal, monosodium glutamate metabolism in: conversion of administered glutamate into other metabolites in vivo, 1146.
—, neonatal, monosodium glutamate metabolism in: effect of load on plasma, brain, muscle and spinal fluid free amino acid levels, 1138.
—, Pitman-Moore miniature: growth, serum chemical values and carcass composition during the first 8 weeks of life, 425.
—, young, influence of level of dietary copper on weight gain, hematology, and liver and iron storage in, 713.
Pigeons, atherosclerosis-resistant and -susceptible, energy metabolism in, 189.
Piglet, effect of dietary regimen on cessation of uptake of macromolecules by intestinal epithelium (closure) and transport to the blood in, 751.
Pigments, fluorescent, in tissues of rats, measurement and spectral characteristics of as a function of dietary polyunsaturated fats and vitamin E, 908.
PIKE, R. L. See Khokhar, S. A., 1126.
PLACKO, R. P. See Graham, G. G., 1347.
Plasma tryptophan response curve and tryptophan requirements of elderly people, 1220.
POE, W. E. See Wilson, R. P., 1359.
POND, W. G. See Gipp, W. F., 713.
Polysome(s), aggregation of, and protein synthesis in perfused rat liver, effect of amino acids on, 109.
— patterns, free and membrane-bound, in rat liver with different dietary intakes of phenylalanine, 937.
— patterns in rat liver, effects of sucrose versus fat as energy source in the diet on, 1521.
Polyunsaturated fatty acids fed to immature hypophysectomized rats, development of dermal symptoms resembling EFA deficiency, 74.
POON, C. H. See Driskell, J. A., 670.
Postnatal food supply and maternal protein deprivation: in vitro synthesis of anterior pituitary growth hormone as affected by, 1012.
POTHOVEN, M. A., AND D. C. BEITZ. Effect of adipose tissue site, animal weight, and long-term fasting on lipogenesis in the bovine, 468.
Pregnancy, effect of zinc repletion late in gestation on parturition in the zinc-deficient rat, 973.
—: role of dietary protein and calories in appetite regulation in the rat, 347.
—, sulfur depletion during; effects on fetal rats of protein restriction and indole or salicylamide administration, 1279.
—, teenage; nitrogen retention, total body ^{40}K and weight gain in, 772.
Prenatal protein deprivation of rats, effect on kidney function in early life, 1467.
Preweaning nutrition, effect of on adipose cellularity and pancreatic insulin release in the Zucker rat, 738.
PRIGGE, W. F., AND F. GRANDE. Effects of dietary fat and of a lipolytic agent on postprandial free fatty acids and fasting serum lipids in the dog, 1200.
PRINGLE, D. J. See Wadhwa, P. S., 899.
PRIOR, R. L., A. J. CLIFFORD AND W. J. VISEK. Growth and metabolism of rats fed nonprotein nitrogen diets supplemented with nicotinamide, succinate and pyridoxine, 1099.
—, AND W. J. VISEK. Effects of urea in rats deprived of arginine, 1107.
PRIVETT, O. S. See Haeffner, E. W., 74.
Proceedings, American Institute of Nutrition (*See* American Institute of Nutrition), 1371.
Proline in the chick, conversion of arginine to, 999.
Protein absorption and small peptide absorption in the fed and fasted rat, 1745.

Protein–calorie deprivation in rats, effects on cerebral protein metabolism of progeny, 61.
Protein–calorie malnutrition, effects on drug metabolism in rat liver microsomes, 811.
— in rat, relation between adrenal cortex and hepatic protein synthesis in, 290.
— and subsequent repletion, differential effects on neuronal and nonneuronal components of cerebral cortex in newborn rats, 1625.
—, their separate effects on development and growth of rat teeth and bones, 856.
Protein and calories in diet: their role in appetite regulation in the rat under various physiological conditions, 347.
— content, dietary, and ratio of fat to carbohydrate calories, effects on energy metabolism and body composition of growing rats, 167.
— deficiency: contrasting effects of DNA and RNA metabolism in rat liver, 1311.
— deficiency: turnover of protein and reutilization of amino acid in cell fractions of rat liver, 257.
— -deficient diets with various amounts of carbohydrate, effect on intestinal disaccharidase activities in the rat, 1716.
— -deficient rats, influence of increased postnatal nutrient intake on kidney cellular development in progeny of, 929.
— depletion, effect on plasma insulin and amino acid concentrations in rats, 720.
— deprivation, maternal, and postnatal food supply, effects on skeletal development in rats, 792.
— deprivation, maternal, and postnatal food supply; in vitro synthesis of anterior pituitary growth hormone as affected by, 1012.
— deprivation, prenatal, effect on kidney function of rats in early life, 1467.
—, dietary, effect on the intestinal biosynthesis of retinol from ^{14}C-β-carotene in rat, 202.
—, dietary, effect on utilization of methionine for phospholipid formation in the rat, 285.
—, dietary: schedule of its ingestion as a determinant factor in physiological regulation of the circadian rhythm in hepatic tyrosine transaminase, 251.
— digestion and absorption of, along the intestinal tract of chicks fed raw and heated soybean meal, 1291.
— and energy levels, dietary: interactions of on channel catfish, 1339.
— /energy ratios in a test diet, response of rainbow trout to varying, 916.
— feeding pattern, effect on biosynthesis of vitamin A from carotene in rats, 1112.
— feeding schedule, effect on nitrogen and energy utilization, and on circadian rhythm of hepatic glycogen, plasma corticosterone and insulin in rats, 866.
— -free diet fed to rats, effect of various carbohydrates in a repletion diet on liver lipid content, 225.
— level, dietary, effect on plasma cholesterol turnover and fecal steroid excretion in the chick, 407.
— level in diet of chickens infused with glutamine, effect on uric acid synthesis, 526.
— and methionine, effect on vitamin A liver storage in rats fed DDT, 218.
— quality, dietary, effects on drug metabolism in the rat, 1425.
— — of noog meal as determined by amino acid composition, plasma amino acid concentrations, and growth of rat, 1512.
— requirement(s) of man: efficiency of egg protein utilization at maintenance and submaintenance levels in young men, 1164.
— — of the neonatal rat, 1608.
— — of young men fed egg or rice protein with excess and maintenance energy intakes, 1673.
— restriction, early postnatal, and repletion, effects on porcine muscle growth and composition, 1637.
— retention in rat, comparison between fat and sucrose as the nonprotein calorie portion of the diet, 342.
— source and dietary level, effect on plasma and tissue free amino acids in growing sheep, 575.
— synthesis and ribosome aggregation in perfused rat liver, effect of amino acids on, 109.
— turnover and reutilization of amino acid in cell fractions of rat liver under conditions of protein deficiency, 257.
— under- and overnutrition, influence on spontaneous tumor prevalence in the rat, 944.
— and vitamin levels, effect of on the nutritional value of heated fats for rats, 1665.
Prothro, J., I. MacKellar, N. Reyes, M. Linz and C. Chou. Utilization of nitrogen, energy, and sulfur by adolescent boys fed three levels of protein, 786.
Provitamin A activities of carotene stereoisomers in rat liver measured by vitamin A storage, 20.
Purine compounds, dietary: a short assay for the estimation of, using a rat model system with inhibition of uricase, 1362.
Putnam, G. B. See Lee, D. J., 916.
Pyridoxal phosphate, composition of rat brain and behavior patterns, vitamin B_6 requirement determined by, 670.
Pyridoxal-5′-phosphate in rat brain, depletion of as a result of pyridoxine deficiency, 462.
Pyridoxine deficiency in rat, effect on cellular growth during prenatal and early postnatal periods of their progeny, 123.
— -deficient rats, cortical-evoked responses in, 462.
—, effect of on red cell fatty acid composition in mature rats fed an essential fatty acid-deficient diet, 1548.
—, metabolic effects of massive doses in rats: possible implications for megavitamin therapy, 143.
Pyrrolase activity, intestinal, in the rabbit, 397.
Pyruvate kinase in rat liver, dietary regulation of; starvation and dietary carbohydrate induction, 321.

Q

Qasim, S. A., and D. A. Stelzig. Stimulation of basal metabolic rate of rats fed dried-grass silage and silage flavonoids, 1658.
Quail, Japanese, antiselenium activity of tri-o-cresyl phosphate in rats and, 560.
— —, effect of dietary protein and carbohydrate levels on liver enzyme activities in, 625.
— —, effect of fluoride on bone formation and strength in, 1431.

R

Rabbit, growing: estimated quantitative amino acid requirement of, 1306.

—, hamster and guinea pig, neonatal, cessation of uptake of macromolecules in intestinal epithelium (closure) and transport into blood, 744.

—, intestinal pyrrolase and formamidase in, 397.

Radiation, gamma, of ^{60}Co and injection of nutrient: effect on respiratory control and swelling in rat liver mitochondria, 836.

Radke, F. H., H. De Haas and R. A. Cook. Utilization of methionine for phospholipid formation as affected by dietary protein in the rat, 285.

Rahn, C. H., D. M. Sand and H. Schlenk. Wax esters in fish. Metabolism of dietary palmityl palmitate in the gourami (*Trichogaster cosby*), 1441.

—. See Sand, D. M., 600.

Rainbow trout, response of to varying protein/energy ratios in a test diet, 916.

Raju, P. K., and R. Reiser. Hepatic stearoyl-CoA desaturase activity as affected by early postnatal dietary cyclopropene fatty acids, 904.

Rand, W. M. See Young, V. R., 1164.

Ranney, R. E. See Oppermann, J. A., 1454, 1460.

Ranshaw, J. See Younoszai, M. K., 454.

Rao, G. A. See Weigand, R. D., 1414.

Rapeseed oil-fed rats; growth, lipid composition, metabolism and myocardial lesions of, 1696.

Reddy, E. K., B. Fletcher, A. Tappel and A. Tappel. Measurement and spectral characteristics of fluorescent pigments in tissues of rats as a function of dietary polyunsaturated fats and vitamin E, 908.

Reddy, K. See Chow, C. K., 618.

Regan, W. O. See O'Dell, B. L., 841.

Reiser, R. See Bartov, I., 1400.

—. See Raju, P. K., 904.

—. See Weigand, R. D., 1414.

Reproduction: in vitro synthesis of anterior pituitary growth hormone as affected by maternal protein deprivation and postnatal food supply, 1012.

— in mice, influence of fluoride intake on, 1319.

Reproductive performance of rats fed diets devoid of one essential amino acid and maintained by ovarian steroids, 207.

Retinol and bone metabolism in the rat, 308.

Retinyl ester, intestinal biosynthesis of in rat from ^{14}C-β-carotene, effect of dietary protein on, 202.

Reutzel, L. F. See Wilcke, H. L., 179.

Reyes, N. See Prothro, J., 786.

Ribonuclease activity, placental, in the rat, effects of vascular insufficiency on, 213.

Richard, M. See Jacobson, N. L., 1533.

Richardson, A. G. See McGown, E., 109.

Rickets in chicks, nutritional effectiveness of 1,25-dihydroxycholecalciferol in preventing, 681.

Riggins, R. S. See Chan, M. M., 1431.

RNA synthesis in rat liver: contrasting effects of protein deficiency on DNA synthesis and on, 1311.

Roe, D. A. See McGarry, P. C., 1279.

Rogers, R. R. See Filer, L. J., Jr., 425.

Ross, J. P., and W. D. Kitts. Relationship between postprandial plasma volatile fatty acids, glucose and insulin levels in sheep fed different feeds, 488.

Ross, M. H., and G. Bras. Influence of protein under- and overnutrition on spontaneous tumor prevalence in the rat, 944.

Rosso, P. See Velasco, E. G., 213.

Roy, R. K. See Chatterjee, G. C., 509.

Rucker, R. B. See Chan, M. M., 1431.

Ruegamer, W. R., and J. F. Mueller. Growth responses in thyroidectomized, hypophysectomized and alloxan diabetic rats infected with plerocercoids of the tapeworm, *Spirometra mansonoides*, 1496.

Rumen microorganisms in sheep, adaptation of biuret as a nonprotein nitrogen source, influence of dietary nitrogen source, concentrate level and biuret level on, 1406.

— —, their adaptation to biuret as an NPN supplement to low quality roughage rations for cattle and sheep, 494.

Rumsey, T. S. See Oltjen, R. R., 1131.

S

Saitoh, M., and S. Takahashi. Changes of embryonic wastage during pregnancy in rats fed low and high energy diets, 1652.

Salmonellosis: nutritional iron deficiency as a determinant of host resistance in rat, 1554.

Sand, D. M., C. H. Rahn and H. Schlenk. Wax esters in fish. Absorption and metabolism of oleyl alcohol in the gourami (*Trichogaster cosby*), 600.

—. See Rahn, C. H., 1441.

Sands, J. See Smart, J. L., 1327.

Sasagawa, S. See Itokawa, Y., 88.

Sasaki, A. See Nakagawa, I., 1195.

Sasmal, N. See Chatterjee, G. C., 509.

Sassoon, H. F., Y. Dror, J. J. Watson and B. C. Johnson. Dietary regulation of liver glucose-6-phosphate dehydrogenase in the rat: starvation and dietary carbohydrate induction, 321.

—. See Dror, Y., 342.

Sauer, F. D. See Kramer, J. K. G., 1696.

Saunders, R. M., M. A. Connor, A. N. Booth, E. M. Bickoff and G. O. Kohler. Measurement of digestibility of alfalfa protein concentrates by in vivo and in vitro methods, 530.

Schemmel, R., O. Mickelsen and L. Fisher. Body composition and fat depot weights of rats as influenced by ration fed dams during lactation and ration fed rats after weaning, 477.

Schlenk, H. See Rahn, C. H., 1441.

—. See Sand, D. M., 600.

Schmidt, Carl, biography of, 637.

Schneider, H. A. Harry Steenbock—a biographical sketch, 1233.

Schneidman, K. See Cohen, P. A., 143.

Scholz, R. W. See Evans, R. M., 242.

—. See Welton, R. F., 890.

Scoliosis, caused by vitamin C deficiency in intensively fed caged channel catfish, 134.

Scott, M. L. Editorial: the selenium dilemma, 803.

—. See Noguchi, T., 444, 1502.

Scrimshaw, N. S. See Tontisirin, K., 1220.

—. See Young, V. R., 1164.

Seier, L. See March, B. E., 371.

Selenium-deficient chick pancreas, biochemical and histochemical studies of, 444.
— — rats and lambs, tissue sulfhydryls in, 336.
— and dental caries susceptibility (letter to the editor), 1634.
— dilemma (Editorial paper), 803.
—, growth stimulating effect on rats and Japanese quail fed tri-*o*-cresyl phosphate, 560.
— retention in tissues and sperm of rats fed a Torula yeast diet, 102.
—, vitamin E, antioxidants and ethyl alcohol: nutritional interrelationships in the rat, 536.
— and vitamin E, effect on tissue antioxidant status of rats, 503.
— and vitamin E, mode of action in prevention of exudative diathesis in chicks, 1502.
Selenium-75, distribution of in the hard and soft tissues of mother rats and their pups, 553.
SELL, J. L. See Guenter, W., 875.
Sephadex, DEAE, effect of feeding it on growth, lactation and lipid utilization in rat, 36.
—, DEAE, effect on liver vitamin A of lactating rats and their offspring, 43.
Serum chemical values, growth and carcass composition of Pitman-Moore miniature pigs during the first 8 weeks of life, 425.
SEWARD, C. R. See Young, M. L., 218.
SGARBIERI, V. C., J. AMAYA, M. TANAKA AND C. O. CHICHESTER. Nutritional consequences of the Maillard reaction. Amino acid availability from fructose-leucine and fructose-tryptophan in the rat, 657.
—, —, — and —. Response of rat to amino acid supplementation of brown egg albumin, 1731.
SHEARER, T. R., AND D. M. HADJIMARKOS. Comparative distribution of ^{75}Se in the hard and soft tissues of mother rats and their pups, 553.
Sheep, adaptation of rumen microorganisms to biuret as an NPN supplement to low quality roughage rations, for cattle and, 494.
— adipose tissue: effect of fasting and refeeding on fatty acid synthesis and enzymatic activity of, 1479.
—, amino acid uptake by small intestine of, 1581.
— fed different feeds, relationship between postprandial plasma volatile fatty acids, glucose and insulin levels in, 488.
—, gluconeogenesis from amino acids in mature wether, 1587.
—, growing, effect of dietary protein level and source on plasma and tissue free amino acids in, 575.
—, response in vitamin B-12 production and absorption to increasing cobalt intake in, 1646.
SHIBATA, F. See Karasawa, Y., 526, 1208.
SHOEMAKER, W. J., AND R. J. WURTMAN. Effect of perinatal undernutrition on the metabolism of catecholamines in the rat brain, 1537.
SHORT, D. D. See Woodward, J. C., 569.
SHRADER, R. E., AND F. J. ZEMAN. In vitro synthesis of anterior pituitary growth hormone as affected by maternal protein deprivation and postnatal food supply, 1012.
— and —. Skeletal development in rats as affected by maternal protein deprivation and postnatal food supply, 792.
SHRAGO, E. See Peng, Y., 1489.
SHULL, L. R., AND P. R. CHEEKE. Antiselenium activity of tri-*o*-cresyl phosphate in rats and Japanese quail, 560.
SIASSI, B. See Siassi, F., 1625.
SIASSI, F., AND B. SIASSI. Differential effects of protein–calorie restriction and subsequent repletion on neuronal and nonneuronal components of cerebral cortex in newborn rats, 1625.
SIGULEM, D. M. See Velasco, E. G., 213.
SIM, J. See March, B. E., 371.
SINGER, L. See Messer, H. H., 1319.
SKIDMORE, W. D. Respiratory control and swelling in rat liver mitochondria: effect of ^{60}Co gamma radiation and injected nutrient, 836.
Skin of rat, DNA synthesis in, effect of zinc deficiency and wounding on, 548.
SKLAN, D., P. BUDOWSKI, I. ASCARELLI AND S. HURWITZ. Lipid absorption and secretion in the chick: effect of raw soybean meal, 1299.
—. See Hurwitz, S., 543.
SKUTCHES, C. L., D. L. HERMAN AND F. H. SMITH. Effect of intravenous gossypol injection on iron utilization in swine, 851.
SMART, J. L., J. DOBBING, B. P. F. ADLARD, A. LYNCH AND J. SANDS. Vulnerability of developing brain: relative effects of growth restriction during the fetal and suckling periods on behavior and brain composition of adult rats, 1327.
SMITH, F. H. See Skutches, C. L., 851.
—. See Herman, D. L., 882.
SMITH, J. T. An optimal level of inorganic sulfate for the diet of a rat, 1008.
—. See Feland, B., 1561.
SNIFFEN, C. J. See Heitmann, R. N., 1587.
Sodium-restricted pregnant rats, aldosterone producing capacity of adrenal glands of, 1126.
Soybean flower, purification and mode of action of a goitrogenic material from, 378.
Soybean meal, raw or heated: effect on lipid absorption and secretion in the chick, 1299.
— —, raw or heated, fed to chicks; digestion and absorption of protein along the intestinal tract, 1291.
— — treated with heat, formalin and tannic acid, nitrogen metabolism in lambs fed, 49.
Soybeans, unheated, contribution of trypsin inhibitors to the deleterious effects on rats fed, 1772.
Soyprotein, alkali-treated, toxicity of in rats, 569.
Starvation–refeeding and dietary carbohydrate induction; dietary regulation of liver glucose-6-phosphate dehydrogenase in the rat, 321.
Steenbock, Harry, biography of, 1233.
Steer fed diethylstilbestrol, feedlot performance and blood plasma amino acid patterns in, 1131.
STEGINK, L. D., M. C. BRUMMEL, D. P. BOAZ AND L. J. FILER, JR. Monosodium glutamate metabolism in the neonatal pig: conversion of administered glutamate into other metabolites in vivo, 1146.
—, L. J. FILER, JR., AND G. L. BAKER. Monosodium glutamate metabolism in the neonatal pig: effect of load on plasma, brain, muscle and spinal fluid free amino acid levels, 1138.
STELZIG, D. A. See Qasim, S. A., 1658.
STEPHAN, J. K., AND J. M. HSU. Effect of zinc deficiency and wounding on DNA synthesis in rat skin, 548.
STERN, J. S. See Johnson, P. R., 738.

Stereoisomers of carotene fed rats; liver storage of vitamin A, 20.
Steroid excretion and plasma cholesterol turnover in the chick, effect of dietary protein level on, 407.
STEWART, C. N., D. B. COURSIN AND H. N. BHAGAVAN. Cortical-evoked responses in pyridoxine-deficient rats, 462.
STILLINGS, B. R., H. R. LAGALLY, E. ZOOK AND I. ZIPKIN. Further studies on the availability of the fluoride in fish protein concentrate, 26.
STOEKER, B., AND L. ARNRICH. Patterns of protein feeding and the biosynthesis of vitamin A from carotene in rats, 1112.
STOEWSAND, G. S., J. L. ANDERSON AND C. Y. LEE. Nitrite-induced methemoglobinemia in guinea pigs: influence of diets containing beets with varying amounts of nitrate, and the effect of ascorbic acid, and methionine, 419.
STOKSTAD, E. L. R. See Thenen, S. W., 363.
STOOKEY, G. K. See McDonald, J. L., Jr., 1528.
STRICKLAND, L. A. See Driskell, J. A., 670.
STURMAN, J. A. Taurine pool sizes in the rat: effects of vitamin B-6 deficiency and high taurine diet, 1566.
—. See Cohen, P. A., 143.
Subcellular fractions of rat liver, protein turnover and reutilization of amino acid in, under conditions of protein deficiency, 257.
SUBRAMANIAN, N. See Nandi, B. K., 1688.
Succinate oxidation in brain mitochondria of rats malnourished in utero, 314.
Sucrose versus fat as energy source in the diet, effects on rat liver polysome pattern, 1521.
— versus fat as the nonprotein calorie portion of the diet, 342.
Sugars, various, effect on hepatic glucose-6-phosphate dehydrogenase, malic enzyme and total liver lipid in the rat, 697.
Sulfate, inorganic; optimal level of for the rat diet, 1008.
Sulfhydryls in tissues of selenium-deficient rats and lambs, 336.
Sulfur-containing amino acids, effect on lipid metabolism of experimental hypercholesterolemic rats, 88.
Sulfur depletion in pregnant and fetal rats: interaction of protein restriction and indole or salicylamide administration, 1279.
—, dietary, effect of on serum cholesterol and the glycocholic:taurocholic acid ratio of the rat, 1561.
—, nitrogen and energy, utilization of by adolescent boys fed three levels of protein, 786.
SUZUKI, T. See Nakagawa, I., 1195.
SWAN, H. See Oltjen, R. R., 1131.
SWAN, P. B. See McGown, E., 109.
SWEENEY, J. P., AND A. C. MARSH. Liver storage of vitamin A in rats fed carotene stereoisomers, 20.
SWENDSEID, M. E. See Dirige, O. V., 1723.
Swine, effect of intravenous gossypol injection on iron utilization in, 851.
—, growing, cadmium toxicity in, 964.
—, neonatal, effect of diet and weaning age on in vitro lipogenesis in, 821.
SZEPESI, B. See Michaelis, O. E., IV, 697.

T

TABACCHI, M. H., AND A. KIRKSEY. Influence of dietary lipids on plasma and hepatic lipids and on blood clotting properties in rats fed oral contraceptives, 1270.
TAKAHASHI, S. See Saitoh, M., 1652.
TAKAHASHI, T. See Nakagawa, I., 1195.
TAMIR, M. See Bielorai, R., 1291.
TANAKA, M. See Sgarbieri, V. C., 657, 1731.
TANPHAICHITR, V., AND H. P. BROQUIST. Lysine deficiency in the rat: concomitant impairment in carnitine biosynthesis, 80.
Tapeworm, growth responses in thyroidectomized, hypophysectomized and alloxan diabetic rats infected with plerocercoids of the, 1496.
TAPPEL, A. See Reddy, E. K., 908.
TAPPEL, A. See Reddy, E. K., 908.
TAPPEL, A. L. See Chow, C. K., 618.
TASAKI, I. See Karasawa, Y., 526, 1208, 1727.
TASKER, J. See Gipp, W. F., 713.
Taurine pool sizes in rat: effects of vitamin B-6 deficiency and high taurine diet, 1566.
TAYLOR, A. N. See Wasserman, R. H., 586.
TAYLOR, Y. S. M. See Young, V. R., 1164.
Teeth and bones of rat, the separate effects of protein and calorie malnutrition on the development and growth of, 856.
—, other hard and soft tissues of mother rats and their pups, distribution of selenium-75 in, 553.
THENEN, S. W., AND E. L. R. STOKSTAD. Effect of methionine on specific folate coenzyme pools in vitamin B_{12} deficient and supplemented rats, 363.
Thiamin deficiency in rat: effect on liver metabolite levels, redox ratios and phosphorylation states, 267.
— excess or deficiency in diet, effect on tissue magnesium, calcium and phosphorus levels in magnesium-deficient rats, 438.
Threonine-deficient rat, joint effects of dietary carbohydrate and fat combinations on changes in lipid metabolism induced in, 991.
Thyroidectomized hypophysectomized and alloxan diabetic rats infected with plerocercoids of the tapeworm, growth responses in, 1496.
Tin, phosphates and whole grain products, effects on dental caries in the rat, 1528.
TOBIN, R. B. See Kies, C., 1155.
TONTISIRIN, K., V. R. YOUNG, M. MILLER AND N. S. SCRIMSHAW. Plasma tryptophan response curve and tryptophan requirements of elderly people, 1220.
Torula yeast diet; selenium retention in tissues and sperm of rats fed a, 102.
Toxicity of cadmium in growing swine, 964.
—and metabolism of tyrosine in rat, effects of dietary protein content and glucagon administration on, 1594.
Transketolase activity in tissues of uremic rats, 1723.
Tri-*o*-cresyl phosphate, an antagonist of selenium and vitamin E in rats and Japanese quail, 560.
Triglycerides, medium-chain, and dietary protein, effect on cholesterol absorption and deposition in the chicken, 923.
—, medium-chain, in rat diet; metabolic consequences of, 829.
TROUT, J. R. See Cousins, R. J., 964.

—. See Gilbreath, R. L., 1637.
Trypsin inhibitors, their contribution to the deleterious effects of unheated soybeans fed to rats, 1772.
Tryptophan conversion to niacin in humans, efficiency of, 1195.
— metabolites and amino acids, urinary excretion of in rats, effect of copper nutriture on, 1764.
— requirements of elderly people and plasma tryptophan response curve, 1220.
—requirements of weanling and adult rats as determined by plasma and tissue tryptophan levels, 1756.
TSAI, A. See Chen, N. S. C., 1182.
TSAI, A. C., AND I. A. DYER. Influence of dietary cholesterol and cholic acid on liver carbohydrate metabolism enzymes in rats, 93.
— and —. Liver cholesterol concentration in relation to hepatic cholesterogenesis and activity of certain liver enzymes in rats, 1119.
Tumor, spontaneous prevalence of in the rat, influence of protein under- and overnutrition on, 944.
Tungsten and chromium, effect on L-ascorbic acid metabolism in rats and chicks, 509.
Turkey used to evaluate vitamin D_3 supplements by biological assay, 1187.
Tyrosine metabolism and toxicity in the rat, effects of dietary protein content and glucagon administration on, 1594.
— transaminase in rat liver, physiological regulation of its circadian rhythm; schedule of protein ingestion as a determinant factor, 251.

U

Undernutrition during fetal and suckling periods, effects on brain growth and behavior of adult rats, 1327.
—, perinatal, effect on the metabolism of catecholamines in rat brain, 1537.
UNDERWOOD, M. C. See Mersmann, H. J., 821.
Urea and 1,3-butanediol, utilization in human adults, 1155.
— and diammonium citrate, comparison of as sources of nonspecific nitrogen for human adults, 664.
—, effects of in rats deprived of arginine, 1107.
— excretion in adult humans with various degrees of kidney malfunction fed milk, egg or an amino acid mixture. Assessment of nitrogen balance, 11.
Uremia in rat, effect on transketolase activity in various tissues, 1723.
Uric acid synthesis in chickens fed high and low protein diet, effect of infused glutamine on, 526.
— — — in chickens fed a 20% protein diet, comparative effect of intravenously administered nitrogenous compounds on, 1208.
— — —, effect of infusing various levels of ammonium acetate or glutamine in chickens on, 1727.
Uricase inhibition used in a rat model system in a short assay to estimate dietary purine compounds, 1362.
Urine of rat, partial purification of anorexigenic substance in, 1616.

V

VAN CAMPEN, D. Enhancement of iron absorption from ligated segments of rat intestine by histidine, cysteine, and lysine: effects of removing ionizing groups and of stereoisomerism, 139.
—. See Gipp, W. F., 713.
—. See Lerner, J., 1519.
VARMA, R. N. See Levander, O. A., 536.
VAVICH, M. G. See Mehansho, H., 1512.
—. See Peng, Y., 608.
VEECH, R. L., D. VELOSO AND M. A. MEHLMAN. Thiamin deficiency: liver metabolite levels and redox and phosphorylation states in thiamin-deficient rats, 267.
VELASCO, E. G., J. A. BRASEL, D. M. SIGULEM, P. ROSSO AND M. WINICK. Effects of vascular insufficiency on placental ribonuclease activity in the rat, 213.
VELOSO, D. See Veech, R. L., 267.
VIHJALMSDOTTIR, L. See Barnes, R. H., 273.
VILAIRE, G. See Young, V. R., 720.
VISEK, W. J. See Gipp, W. F., 713.
—. See Prior, R. L., 1099, 1107.
Vitamin A biosynthesis from carotene in rats, effect of protein feeding pattern on, 1112.
— contamination in commercial stabilized vitamin E (Letters to the Editor), 152.
— in liver of lactating rats and their offspring, effect of DEAE Sephadex, 43.
—, liver storage in rats fed carotene stereoisomers, 20.
— storage in liver of rats fed DDT, effect of protein and methionine on, 218.
Vitamin B-6 deficiency in rat and high taurine diet, effects on taurine pool sizes, 1566.
— -deficient rats: effect of administration of growth hormone and vitamin B-6 on ^{14}C-α-aminoisobutyric acid uptake by, 1352.
— requirement of the male rat as determined by behavioral patterns and biochemical characteristics of the brain, 670.
Vitamin B-12-deficient and supplemented rats, effect of methionine on specific folate coenzyme pools in, 363.
— production and absorption in sheep, response to increasing cobalt intake, 1646.
Vitamin C deficiency, effect on intensively fed caged channel catfish, 134.
— -deficient channel catfish, impaired collagen formation in, 1359.
—, large doses of, effects in guinea pigs and rats, 1688.
Vitamin D_3, effect on intestinal absorption of phosphate in the chick, 586.
—, nutritional effectiveness of in preventing rickets in chicks, 681.
— supplements, evaluation of by biological assay using the turkey, 1187.
—, commercial stabilized, contamination by vitamin A (Letters to the Editor), 152.
—, dietary, effect on the activities of the glutathione peroxidase system in rat tissues, 618.
— and dietary polyunsaturated fats, measurement and spectral characteristics of fluorescent pigments in rat tissues as a function of, 908.
— excess in the chick, toxic effects of, 371.

—, growth stimulating effect on rats and Japanese quail fed tri-*o*-cresyl phosphate, 560.
—, selenium, antioxidants and ethyl alcohol: nutritional interrelationships in the rat, 536.
— and selenium deficiency, its influence on avian malarial infection in the duck, 231.
— and selenium, effect on tissue antioxidant status of rats, 503.
— and selenium, mode of action in prevention of exudative diathesis in chicks, 1502.

W

WADHWA, P. S., C. E. ELSON AND D. J. PRINGLE. Diurnal changes in the fatty acid patterns of rat liver lipids, 899.
WAIBEL, P. E. See Yang, H. S., 1187.
WALKER, B. L. See Zehaluk, C. M., 1548.
WANG, M. See Dirige, O. V., 1723.
WANG, S., L. O. CROSBY AND M. C. NESHEIM. Effect of dietary excesses of lysine and arginine on the degradation of lysine by chicks, 384.
WASSERMAN, R. H., AND A. N. TAYLOR. Intestinal absorption of phosphate in the chick: effect of vitamin D_3 and other parameters, 586.
WATSON, J. J., C. COOK, D. S. KELLEY, A. M. CHANDLER AND B. C. JOHNSON. Effects of sucrose versus fat as energy source in the diet on rat liver polysome patterns, 1521.
—. See Dror, Y., 342.
—. See Sassoon, H. F., 321.
Wax esters in fish roe: metabolism of dietary palmityl palmitate in the gourami, 1441.
Weaning age and diet, effect on in vitro lipogenesis in young swine, 821.
—, premature, and feeding a high fat or high carbohydrate diet to weanling rats, immediate and late effects of, 690.
WEBB, R. E. See Miranda, C. L., 1425.
WEIGAND, R. D., G. A. RAO AND R. REISER. Dietary regulation of fatty acid synthetase and microsomal glycerophosphate acyltransferase activities in rat liver, 1414.
WEINLAND, B. T. See Oltjen, R. R., 1131.
WELTON, R. F., R. J. MARTIN AND B. R. BAUMGARDT. Effects of feeding and exercise regimens on adipose tissue glycerokinase activity and body composition of lean and obese mice, 1212.
—, —, R. W. SCHOLZ AND B. R. BAUMGARDT. Effects of dietary manipulation on adipose tissue glycerokinase activity and plasma metabolite levels in the chicken (*Gallus domesticus*), 890.
WESTMAN, T. L. See Yoshimura, N. N., 1256.
WESWIG, P. H. See Broderius, M. A., 336.
WEYANT, J. See Dryden, L. P., 36.
WHANGER, P. D. See Broderius, M. A., 336.
Wheat flour supplemented by varying levels of lysine or delactosed demineralized whey, effect on growth and body composition of young rats, 515.
— gluten in rat diet: lysine deficiency produces reduced tissue carnitine content, 80.
Whey, delactosed and demineralized, as a supplement to wheat flour; effect on growth and body composition of young rats, 515.
WHITEHAIR, C. K. See Yarrington, J. T., 231.
Whole grain products, phosphates and tin, effects on dental caries in the rat, 1528.
WILCKE, H. L., D. T. HOPKINS, L. F. REUTZEL AND L. W. DECLUE. Evaluation of linear programming techniques in formulating human diets with rat-feeding tests, 179.
WILKINSON, W. See Yoshimura, N. N., 1256.
WILEY, J. H., AND G. A. LEVEILLE. Metabolic consequences of dietary medium-chain triglycerides in the rat, 829.
WILLIAMS, L., AND C. CARROLL. Effects of the dietary carbohydrate–fat combination on changed lipid metabolism induced in rats by amino acid imbalance, 991.
WILSON, R. B. See Young, V. R., 720.
WILSON, R. P., AND W. E. POE. Impaired collagen formation in the scorbutic channel catfish, 1359.
WINICK, M. See Velasco, E. G., 213.
WONG, E. See March, B. E., 371.
WOODARD, J. C., AND D. D. SHORT. Toxicity of alkali-treated soyprotein in rats, 569.
WOSTMANN, B. S. Intestinal bile acids and cholesterol absorption in the germfree rat, 982.
Wound and zinc deficiency, effect on DNA synthesis in rat skin, 553.
WRENN, T. R. See Dryden, L. P., 36.
WURTMAN, R. J. See Shoemaker, W. J., 1537.

X

Xanthine dehydrogenase activity in liver and kidney of chicks fed high fat and high protein "carbohydrate-free" diets, 242.

Y

YANG, H. S., P. E. WAIBEL AND J. BRENES. Evaluation of vitamin D_3 supplements by biological assay using the turkey, 1187.
YARRINGTON, J. T., C. K. WHITEHAIR AND R. M. CORWIN. Vitamin E–selenium deficiency and its influence on avian malarial infection in the duck, 231.
YEH, S. C., AND G. A. LEVEILLE. Influence of dietary protein level on plasma cholesterol turnover and fecal steroid excretion in the chick, 407.
YOKOTA, H.-O. See Karasawa, Y., 526, 1208.
YOSHIMURA, N. N., H. EHRLICH, W. WILKINSON, T. L. WESTMAN AND F. H. DEIDOERFER. Maltose in total parenteral nutrition of rats, 1256.
YOSHITOSHI, Y. See Naito, C., 730.
YOUNG, F. See Olson, C. R., 189.
YOUNG, M. L., G. V. MITCHELL AND C. R. SEWARD. Effect of protein and methionine on vitamin A liver storage in rats fed DDT, 218.
YOUNG, V. R., AND H. N. MUNRO. Plasma and tissue tryptophan levels in relation to tryptophan requirements of weanling and adult rats, 1756.
—, Y. S. M. TAYLOR, W. M. RAND AND N. S. SCRIMSHAW. Protein requirements of man: efficiency of egg protein utilization at maintenance and submaintenance levels in young men, 1164.
—, G. VILAIRE, P. M. NEWBERNE AND R. B.

WILSON. Plasma insulin and amino acid concentrations in rats given an adequate or low protein diet, 720.
—. See Tontisirin, K., 1220.
YOUNOSZAI, M. K., AND J. RANSHAW. Gastrointestinal growth in the fetus and suckling rat pups: effects of maternal dietary protein, 454.

Z

ZEHALUK, C. M., AND B. L. WALKER. Effect of pyridoxine on red cell fatty acid composition in mature rats fed an essential fatty acid-deficient diet, 1548.
ZEMAN, F. See Chan, M. M., 1431.
ZEMAN, F. J. See Allen, L. H., 929, 1467.
—. See Shrader, R. E., 792, 1012.
ZILE, M., H. AHRENS AND H. F. DELUCA. Vitamin A and bone metabolism in the rat, 308.
Zinc deficiency, effect on insulin release from the pancreas in rat, 1739.
— deficiency or excess, effect on zinc metalloenzymes in the rat, 1175.
— deficiency in rats, prenatal and postnatal development after transitory gestational, 649.
— deficiency and repletion late in gestation: effect on parturition in the zinc-deficient rat, 973.
— deficiency and wounding, effect on DNA synthesis in rat skin, 548.
— metalloenzymes in the rat, effect of dietary zinc on, 1175.
ZIPKIN, I. See Stillings, B. R., 26.
ZOOK, E. See Stillings, B. R., 26.
ZUCKER, L. M. See Johnson, P. R., 738.